Geneva Cultural Trails

Botany

In the City

The “Botany” Cultural Trail leafs through the pages of the history of this science in Geneva from the 18th century to the present day. Fertile ground for this area of study, the city saw the birth of distinguished naturalists who helped to build Geneva’s international reputation for botany, with the support of authorities who agreed to leave room for nature when the city’s bastions were no longer required for defensive purposes.

The walk travels from the Old Town through parks and gardens, relating anecdotes and ideas associated with the great figures of natural history, who laid the foundations for the creation of the Botanical Conservatory and Garden.

Give more insight to your time on the trail by listening to the voices of botany experts in Geneva and other persons doing conservation work for the City of Geneva’s Parks, Gardens and Environment Service.

You can access our audioguides on: ville-geneve.ch/cultural-trails or by downloading the *Sentiers Culturels* app for free on AppStore or GooglePlay

VILLE DE GENÈVE

Practical Information

Finding the Trail

Public Transport

Left Bank: Old Town: bus 36, stops Bourg-de-Four, Cathédrale and Hôtel-de-Ville; buses 3 and 5, stop Palais-Eynard; bus 7, stops Bel-Air Cité, Molard and Musée d'art et d'histoire; tram 12, buses 2 and 10, stops Bel-Air Cité and Molard
Bastions: trams 12 and 18, stops Place de Neuve and Plainpalais; buses 3 and 5, stop Place de Neuve
Right Bank: regional train, stop Sécheron; boat M4, landing stage De-Châteaubriand; buses 1, 11, 25, 28, stop Jardin botanique
Information correct as of October 2018
For further information: www.tpg.ch

Bicycle Parking

Left Bank: Old Town: Bel-Air Cité, Rue Henri-Fazy, Place du Bourg-de-Four;
Bastions: Rue De Candolle, in front of Uni-Bastions; Place de Neuve, opposite the tram stop
Right Bank: Grounds of La Perle du Lac in front of the History of Science Museum; Avenue de la Paix, near Place Albert-Thomas close to the main entrance to the Botanical Garden and before the railway bridge.
Cycling is not permitted in the parks. *Cyclists are requested to leave bikes outside or to dismount.*

Car Parks

Left Bank: Old Town: Saint-Antoine car park, Bastions: Plaine de Plainpalais car park; entrance on the Boulevard Georges-Favon
Right Bank: P+R Sécheron

Accessibility

All information on access to buildings can be found on the website accessibilite.ch

On the Spot

Wi-Fi

Left Bank: Place du Bourg-de-Four; Cour de Saint-Pierre, Maison Tavel ; Hôtel de Ville; Geneva Library, Parc des Bastions
Right Bank: Botanical Conservatory and Garden: Villa Le Chêne and Temperate Greenhouse; History of Science Museum; La Perle du Lac restaurant

Toilets

Left Bank: at entrance to Parc des Bastions, near the bandstand
Right Bank: Botanical Garden, Villa Mon Repos

Where to Eat

Parc des Bastions bandstand ; Botanical Garden Le Pyramus restaurant ; La Perle du Lac Restaurant

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Botany in Geneva : some historical landmarks

1712
Birth of Jean-Jacques Rousseau, originator of the naturalistic spirit prevalent in Geneva in the 18th century.
PP 7-8

1720
Birth of Charles Bonnet, one of the leaders of naturalistic physics in Geneva, one of the city's two "botanical" schools of thought.
P 12

1740
Birth of Horace-Bénédict de Saussure who established a link between the two "botanical" schools of thought that co-existed in Geneva in the 18th century.
PP 8-9

1754
Bonnet writes *Research in the Usage of Leaves of Plants*. This work paves the way for naturalistic science in Geneva.

1756
Saussure becomes friends with Bonnet and focuses initially on the study of plant anatomy.

1760
Saussure meets Albrecht von Haller, the famous Bernese naturalist. He travels to Chamonix on von Haller's behalf to collect alpine plants. From then on, he concentrates on descriptive botany, abandoning the study of plant anatomy.

1762
Saussure writes *Observations on the Epidermis of Leaves and Petals*. This work demonstrates his interest in plant nomenclature, and adds impetus to the development of this "botanical" school of thought in Geneva. Rousseau is introduced to botany in the Val-de-Travers. The accounts of his excursions introduce a sense of nature into literature.

1771-1774
Rousseau writes *his Letters on the Elements of Botany*. He lays his foundations for the emergence of didactic literature. His *Letters* inspire the passion for botany of the French baron, Benjamin Delessert, who would later bequeath his herbarium to Geneva in homage to Rousseau.

1778
Birth of Augustin-Pyramus de Candolle, a botanist world-renowned for his body of work, the founder of botanical geography, and the instigator and first director of Geneva's Botanical Garden.
pp 15-17

1791
Foundation of the Society of Physics and Natural History (SPHN), which made it possible to coordinate naturalistic studies in Geneva. An inventory of all the productions of nature is undertaken, and all natural phenomena within the city are observed.

1793
The SPHN creates a small botanical garden on the Saint-Léger bastion. Its primary aim is to describe the region from a natural history viewpoint.
P 13

1794
De Candolle begins his study of botany in the SPHN gardens.

He is accepted as a member of the SPHN in 1798. In his will, he entrusts the SPHN with the task of encouraging future scientists to work in the field of systematic botany by instituting the Augustin-Pyramus de Candolle Prize.

Seven people are condemned by the Revolutionary Tribunal and shot on the Bastions Promenade. In choosing the Bastions as the site for the future Botanical Garden, De Candolle hopes to erase from people's minds the bad memories associated with it.

1798
De Candolle travels to Paris, where he works at the Botanical Garden and at the Museum of Natural History. He soon becomes noticed for his talents as a botanist and receives important commissions.

1808
De Candolle is appointed Professor of Botany and Director of the botanical garden in Montpellier.

1813
De Candolle presents his Elementary Theory of Botany. This major work on the principles of botanical classification earns him an eminent position in the history of systematics.

1816
De Candolle is appointed Professor of Botany and Zoology at the Geneva Academy.

The "year without a summer" has a profound effect on the weather, leading to famine in Geneva. The area of land intended to be used for the botanical garden next to the Bastions Promenade is planted with potatoes to feed the local population.
P 14

1817
The Botanical Garden opens at Bastions in November, spearheaded by De Candolle, who becomes its director.
Six hundred species are planted according to the order given in his *Prodrome*.
PP 14-16

1817-1820
Construction of an orangery and the gardener's house and the planting of 50 flowerbeds to enhance the Botanical Garden.

1818-1821
De Candolle publishes the first two volumes of his *Systema naturale*, intended to be an exhaustive catalogue of plants from around the world.
He continues his work in an abridged form : the *Prodrome*.

1824-1826
Construction of the Botanical Conservatory to house seeds, the herbaria, a library and study rooms to complement the Botanical Garden.

1835
Alphonse de Candolle takes over from his father at the head of the Botanical Garden (until 1850).

1844-1873
Alphonse de Candolle, with other contributors, completes the *Prodrome* started by his father. This publication establishes the international rules for nomenclature.

1869
Baron Delessert's herbarium joins the rich holdings of the Botanical Garden and forms the core of the Geneva collection.

1904
For reasons of space, the Botanical Garden is moved to its current location. The building known as La Console is constructed to house the Conservatory and its herbaria (it has also been home to the cryptogamic collections since 2015). The gardens are transferred to the Ariana estate.
PP 20-22

1910-1911
A conservatory is built along the old Chemin de Varembé, as the greenhouses from De Candolle's era could not be moved. This new construction is displaced when the Palace of Nations is erected on the site.

1921
De Candolle's collections are given to the Botanical Conservatory and Garden (CJBG). These include his *Prodrome* herbarium and those of the *Monographiae Phanerogamarum*, as well as his second herbarium and his library.

1943
The Boissier herbarium joins the collections of the CJBG. Edmond Boissier, a student of De Candolle, had assembled a herbarium containing over 200,000 specimens from the Iberian Peninsula, Greece and the Middle East.

1972-1973
Construction of several buildings, including the library, which would be renovated in 2016. The CJBG library is considered one of the most important in the world for botanical science.

2017
The CJBG in figures :

A library containing over 120,000 volumes in the fields of plant taxonomy and global flora, as well as 4400 scientific journals;

A herbarium with more than 6 million specimens preserved on 18 kilometres of shelving - one of the largest in the world;

A botanical garden covering 28 hectares;

An alpine garden of over 1 hectare containing some 3500 plants;

20,000 plants cultivated every year to decorate the gardens.

Definitions

This section is devoted to the definitions of terms marked by an asterisk.

Botany:

Botany, or the study of plants, has been considered as a science in its own right since it gradually broke away from medicine in the 17th century. In the 18th century, its aim was to achieve understanding of the entire plant kingdom, and it split into two distinct schools of thought. The first concerns **naturalistic physics**, based on the physiological and anatomical study of plants. The second deals with "botany in the strict sense", and embraces all work whose goal is to describe and name plants. The Swedish naturalist **Carl Linnaeus*** (1707-1778) gave this discipline its legitimacy by developing a system of binomial nomenclature that made it possible to name any plant (or animal) species. This binomial is composed of two Latin names: the first part identifies the genus (the generic name), while the second designates the species within that genus (the specific epithet). Linnaeus founded his classification system on the number and specific arrangement of the visible reproductive organs. In the second half of the 18th century, this method sparked much scholarly debate and a move towards a **"natural" classification** of organisms, based on all the internal and external characteristics of plants, rather than just on some "arbitrarily" chosen parts of the plant, as advocated by the **Linnaean system**.

Though these different schools of thought ultimately shared a common goal, they remained two separate fields of study until the mid-19th century. The first "plant physics" school of research that prevailed in Geneva until the late 18th century was led by Charles Bonnet, followed by naturalists such as Jean Senebier and Jean-Pierre-Étienne Vaucher. Although Horace-Bénédict de Saussure established a significant link between the two schools of thought, the second grew in importance in Geneva in the 1790s with the establishment of the Society of Physics and Natural History (SPHN) and the development of descriptive natural history. The founders of this learned society had a sensitive approach to their natural surroundings, fostered by a reading of Rousseau's works, and they encouraged field research. It was from this breeding ground for reflection that Augustin-Pyramus de Candolle developed the great ideas that would make him an internationally-renowned botanist, affirming himself that "We are all the intellectual heirs of our predecessors". In the 18th century, scholars studied the entire natural history kingdom, in contrast with the 19th century that saw a specialization of disciplines, as well as the professionalization of science. The early scientists are therefore more readily called naturalists, and the later, botanists.

Taxonomy:

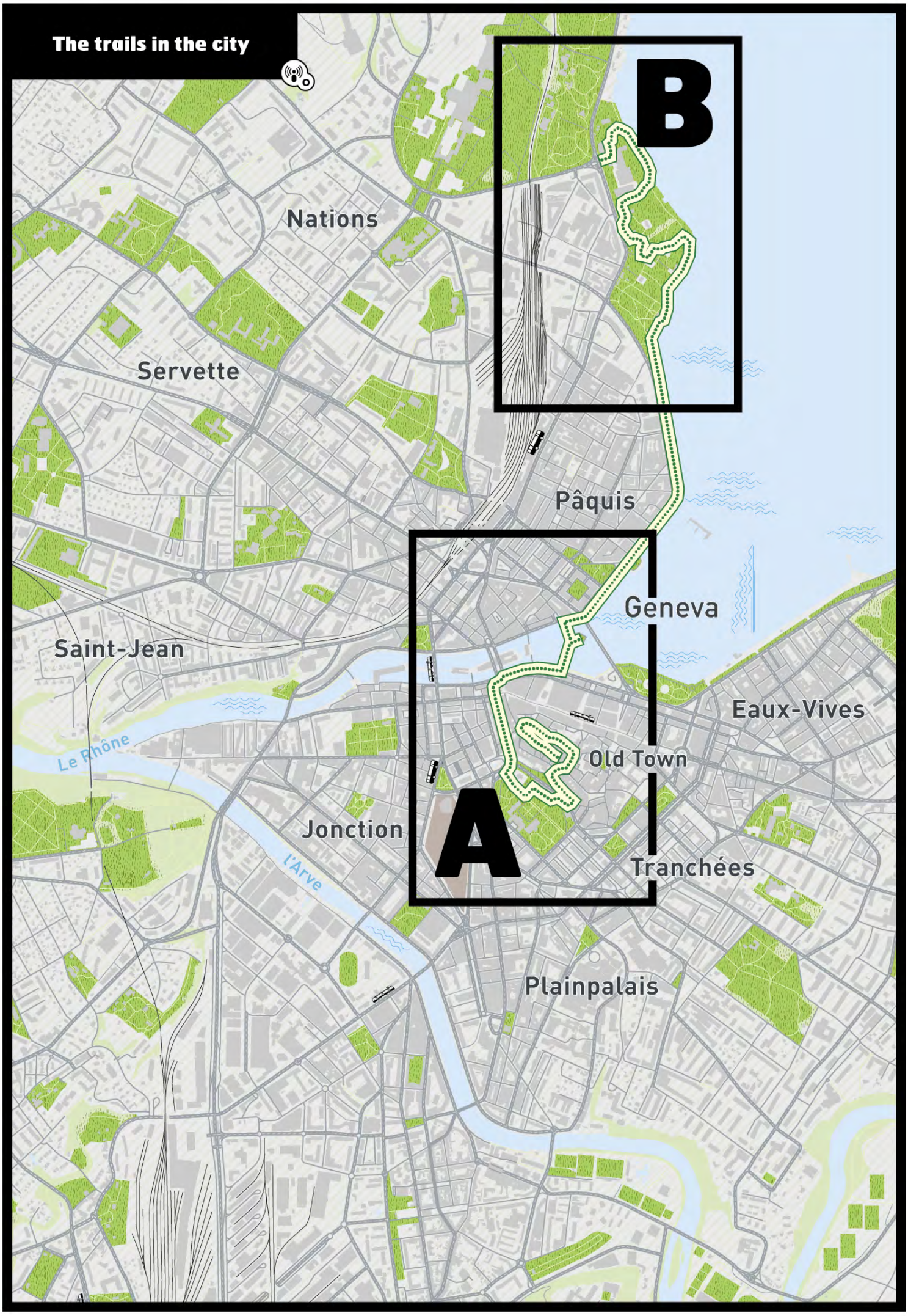
A term coined in 1813 by Augustin-Pyramus de Candolle in his *Elementary Theory of Botany*, taxonomy is a science of classification – of plants in the case of botany – in which living beings are grouped according to their physical characteristics. A taxonomic group of any rank is called a **taxon**. Each plant individual belongs to a number of hierarchically ordered taxa. The principal ranks of taxa are, in descending order: kingdom, phylum, class, order, family, genus and species.

Herbarium:

A **herbarium** is a collection of dried plants pressed between sheets of paper. It is used as a physical basis for plant studies, mainly in the fields of taxonomy and systematics. The richness of a herbarium depends not only on the number of specimens, but also on the number of types it contains. "Closed" herbaria are reference works with collections arranged in a fixed order, like De Candolle's *Prodrome* herbarium. **To herborize** means to collect plants in the wild. In the 18th century, herborizations or botanical expeditions were an essential part of a botanist's training.

Prodrome:

The *Prodromus systematis naturalis regni vegetabilis*, or Prodrome, is a botanical treatise devised as a synthesis of the descriptions of seed plants, organized according to De Candolle's system, based on the natural method of botanical classification. Begun by Augustin-Pyramus de Candolle, who wrote the first seven volumes between 1824 and 1839, it was continued by his son Alphonse and numerous other contributors until 1873.


The trails in the city
B
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Servette
Pâquis
Geneva
Saint-Jean
Eaux-Vives
Le Rhône
Old Town
A
Jonction
l'Arve
Tranchées
Plainpalais


A
Pâquis
Geneva
Old Town
Tranchées
Plainpalais
Plaine de Plainpalais
Place de Neuve
Bibliothèque de Genève
CFF FFS
R. DE LAUSANNE
RUE DES ALPES
RUE DES PÂQUIS
QUAI WILSON
RUE CHANTEPOULET
Rue Rousseau
RUE GOUTANCE
QUAI DES BERGUES
PONT DU MONT-BLANC
RUE DU RHÔNE
AV. PICTET-DE-ROCHEMONT
RUE DU STAND
BD. G.-FAVON
RUE DU GÉN.-DUFOUR
RUE DE LA CORRATERIE
RUE DE LA CROIX-ROUGE
R. de-Saussure
Rue de-Candolle
Rue J.-Senebier
Rue C.-Bonnet
BD. J.-DALCROZE
BD. HELVÉTIQUE
R. DE L'ATHÉNÉE
BD. DES PHILOSOPHES
AV. DU MAIL
AV. HENRY-DUNANT
RUE DE CAROUGE
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1

6 Rue du Puits-Saint-Pierre

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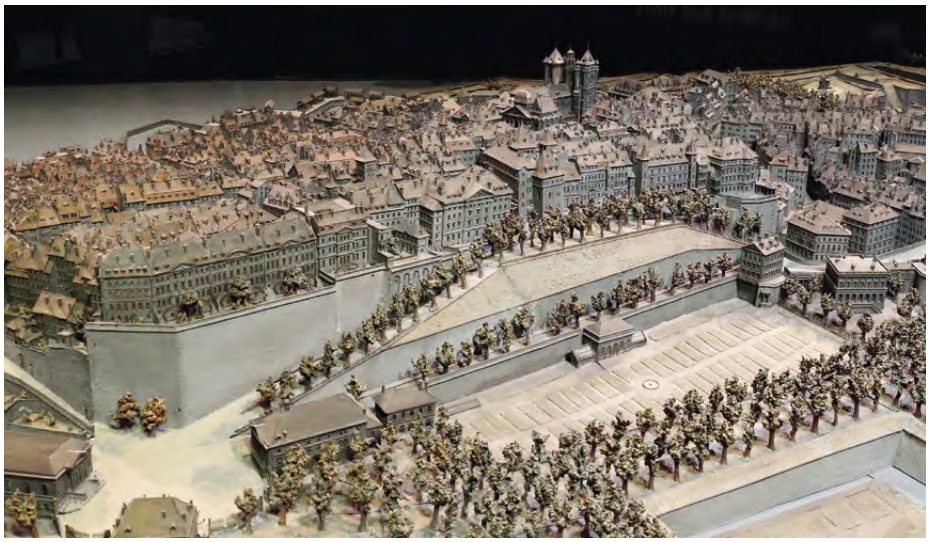
E-mail mah@ville-ge.ch
Web mah-geneve.ch
Tu - Su 11AM – 6PM

The Magnin Relief Model at the Maison Tavel

The oldest private residence in Geneva is home to the famous Magnin Relief Model, an impressive reconstruction of Geneva in the mid-19th century, shortly before the demolition of its fortifications ordered by James Fazy. This masterpiece by the Genevan architect Auguste Magnin, a precise reproduction of each street and building, took 18 years to complete!

Study it carefully in order to appreciate the arrangement of the Upper Town, surrounded by its bastions and fortifications, and land development features such as the Promenade de la Treille or the Botanical Garden in the Parc des Bastions.



2

40 Grand-Rue

Tel +41 22 310 10 28
Web m-r-l.ch
Tu - Su 11AM – 5:30PM

Maison de Rousseau et de la Littérature

ROUSSEACEAE *Carpodetus arboreus*, from the R. J. Johns herbarium – Botanical Conservatory and Garden, Geneva

Jean-Jacques Rousseau was born in this building on 28 June 1712. His thoughts and writings influenced the naturalistic spirit that developed in Geneva in the 18th century, although he is not strictly considered a naturalist himself. Today, 40 Grand-Rue houses the Maison de Rousseau et de la Littérature (MRL).

Jean-Jacques Rousseau (1712-1778)
"As long as I herborize*, I am not unhappy"

Jean-Jacques Rousseau was interested in botany in the later part of his life, when this "Citizen of Geneva" no longer had any ties with his birthplace, even being forced to renounce his citizenship. Nevertheless, his writings on botany and his relationship to nature not only influenced Genevan botanists such as Saussure and De Candolle, but probably also inspired Benjamin Delessert's passion for botany, whose immense herbarium was given to the City and became the core of the Genevan collection.

In June 1762, the Parliament of Paris condemned Jean-Jacques Rousseau for his work *Emile, or On Education*, deemed impious and dangerous, and copies of it were burned in the French capital and in Geneva. He was obliged to flee Paris and, avoiding Geneva and Bern, arrived in the Principality of Neuchâtel, then ruled by Frederick II of Prussia, who granted him asylum. Rousseau found refuge at the home of his friend Daniel Roguin and became friends with Madame Boy de la Tour and her daughter Madeleine-Catherine, nicknamed "my cousin", the future wife of Étienne Delessert. Unwelcome in Yverdon, Rousseau moved to Môtiers in the Val-de-Travers where he met Dr. Jean-Antoine d'Ivernois. This distinguished botanist introduced him to the work of Linnaeus* and became his first tutor of botany. In the heart of the countryside, the 50-year-old Rousseau developed a passion for this study that "soothe[d] and console[d] [him]".

Accompanied by other naturalists from the Neuchâtel and Jura regions, he carried out many expeditions into the surrounding mountains to collect plant specimens for the creation of herbaria*, that he organised according to the Linnaean system*. He discovered and admired the works of Albrecht von Haller from Bern, then the most important botanist of the century (who for his part disapproved of Rousseau's political ideas). Faced with another setback due to the polemics over his writings and quarrels with the Principality's clergy, this highly controversial thinker retreated, hidden from public view, to St. Peter's Island on Lake Bienne in 1765. There, Rousseau immersed himself in the contemplation of nature and the search for inner peace. Keen to discover every detail of his new home, he scoured the area daily, collected, drew – we mustn't forget he was a trained engraver – and described the plants found there, nourishing the (unfulfilled) dream of writing the history of the island's vegetation, the *Flora petrinsularis*. Through botany, truly cathartic for the soul, he was able to forget his reflections on human misery and calm his mental turmoil. Once again forced to flee in 1766, Rousseau took refuge in England, where he continued his herborizing activities, notably in the company of the Duchess of Portland, also passionate about botany. Returning to France in 1767, he continued to collect specimens until the end of his life. He died suddenly in 1778 at Ermenonville, where he was buried on the Île des Peupliers. His ashes were transferred to the Pantheon in 1794.

Inula britannica, from the J.-J. Rousseau herbarium – Neuchâtel Public and University Library

Rousseau's accounts of his excursions appealed to famous figures like Goethe, but above all they introduced a new element into botanical literature: a sense of nature, paving the way for the popularisation of scholarly writings, such as those by Saussure. De Candolle even claimed in his Memoirs that "Jean-Jacques Rousseau's love of botany was among the causes of its development in France". However, it is Rousseau's *Letters on the Elements of Botany*, subsequently translated into several languages, which have had the greatest influence. They laid the foundations for the vast body of scientific didactic literature that flourished in the 19th century, and transformed the teaching of the natural sciences. The history of this introductory treatise on plant anatomy, written in Paris between 1771 and 1774 in epistolary form, makes it possible to round off Rousseau's links to Geneva. He wrote his *Letters* as a substitute for the catalogue of plants commissioned by his "cousin" Madeleine-Catherine Delessert, who wished to further the education of her young daughter Madelon. Yet these writings were in fact to inspire her son Benjamin (1773-1847) with a passion for botany. This later rich French industrialist and baron of the Empire devoted part of his fortune to the creation of one of the largest private herbaria of the day - 250,000 specimens representing 86,000 species according to the taxonomy* of the day - which he placed at the disposal of scholars like De Candolle. Bequeathed according to his wishes, "to the birthplace of his master Jean-Jacques Rousseau", the Delessert herbarium was transferred to the Botanical Conservatory and Garden in 1869 to form the heart of the Geneva collection.

Trachelium caeruleum, from the J.-J. Rousseau herbarium, Neuchâtel Public and University Library

3

24 Rue de la Cité

The Saussure House

Doronicum clusii, from the H.-B. de Saussure herbarium, Botanical Conservatory and Garden, Geneva

Horace-Bénédict de Saussure moved into the Boissier family's imposing residence on his marriage to Albertine-Amélie in 1765. He set up his study and spent most of his life here. The residence, known today as the Maison Saussure, was built in 1707 by the architect Abeille for Jean-Antoine Lullin, the grandfather of Albertine-Amélie.

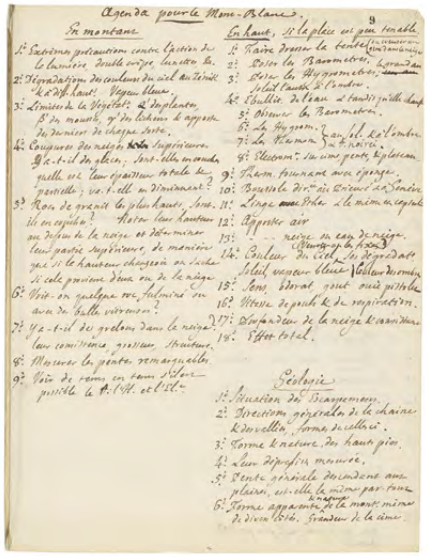
Horace-Bénédict de Saussure (1740-1799)
A scholar in search of the origins of the world

Well-known for his ascent of Mont Blanc, and renowned for his geological, meteorological and educational work, Saussure also made his mark in the field of botany, even though he only practiced it sporadically throughout his life. Through his love for field research, this scholar managed to establish a link between the two schools of thought that co-existed in the 18th century – "plant physics", based on the physiological and anatomical study of plants, and descriptive botany, derived from the work of Carl Linnaeus, which aimed to classify and name plants.

The young Horace-Bénédict was passionate about mountains and made many expeditions into the areas surrounding Geneva while studying philosophy at the Academy there. It was also at this period, from 1756 onwards, that he began to spend time with the naturalist Charles Bonnet, his uncle through marriage to Saussure's aunt. Bonnet, who was interested in microscopic botany, became Saussure's first mentor and influenced his nephew's botanical activities. He guided him towards the study of plant anatomy and gave Saussure his first microscope on his 22nd birthday. Jean Senebier, also a naturalist, relates that "Saussure never undertook any study without communicating its contents to his uncle, and only published his works after submitting them to him".

Doronicum clusii, from the H.-B. de Saussure herbarium, Botanical Conservatory and Garden, Geneva

In 1760, through Charles Bonnet, Saussure met Albrecht von Haller who (ever since 1728) had been drawing up an inventory of Swiss flora. This important Bernese botanist recruited Saussure along with other young botanists to collect plants in the alpine region. The opportunity to visit the Chamonix valley was to leave a lasting mark on this mountain lover: the Mont Blanc would never be out of Saussure's thoughts again; he was one of the first to attain its summit in 1787, accompanied by the guide Jacques Balmat. Over the course of his relationship with Von Haller, Saussure gradually freed himself from the tutelage of Bonnet, the "home-based naturalist", and discovered his true vocation, that of a field botanist. In 1762, he wrote his *Observations on the Epidermis of Leaves and Petals*, a determining factor in his appointment as Professor of Philosophy at the Academy in the same year. In this publication, which complements Bonnet's *Research in the Usage of Leaves of Plants*, he confirms some of his uncle's conclusions on the use of plants, while at the same time advancing the notion that plants could be divided into classes and genera, evidence of his interest in nomenclature, thus distancing himself from Bonnet. Von Haller helped his pupil to create a herbarium by providing him with the means to identify the plants himself. For his part, Saussure sent publications to his mentor, enabling him to produce his *Biblioteca botanica*. Paradoxically, though he carried out taxonomic work himself, the Bernese botanist refused to adopt the Linnaean binomial nomenclature*. This did not prevent Saussure from making many of Von Haller's names synonymous with the corresponding ones in the Linnaean system, thus facilitating the circulation of Von Haller's works on Swiss flora within the scientific community. This initiative earned him a certain notoriety in the eyes of his peers.
Saussure's position at the Academy allowed him to carry out more Alpine expeditions during the summer months, which led to the publication between 1779 and 1796 of the four volumes of his seminal work *Travels in the Alps*, in which he combines travel writing with scientific descriptions in the same vein as Rousseau's works.



"Choice of the most important notes for the account of the journey to the Mont Blanc summit", leaflet 9 : Agenda for the Mont Blanc – The Geneva Library

As a worthy representative of a scholar of the Age of Enlightenment, he sought answers to his questions in nature. One of the issues that preoccupied him was the origins of the Earth. Scouring the Alps in search of granite massifs and other geological curiosities, he hoped to find an answer to this fundamental question, but his *Theory of the Earth* was to remain in draft form only.

A meticulous observer, Saussure conducted experiments into pressure and temperature variation at different altitudes, designing and making scientific instruments for this purpose adapted to his needs, as well as developing an interest in agrometeorology. A founder member of the Society of Arts in 1774, with the aim of encouraging the arts

Saussurea alpina, from the Boissier herbarium, Botanical Conservatory and Garden, Geneva

and agriculture and promoting dialogue between scholars and craftsmen for the benefit of the Genevan economy, he wrote a meteorological chronicle for the society's bulletin - which later became the *Journal de Genève*. In his garden at Frontenex, Saussure cultivated the alpine plants and seeds that he collected during his expeditions, which gave him the opportunity to exchange correspondence and seeds with naturalists in other countries, and draw conclusions on the influence of cultivation on the possible morphological modification of plants. Though criticized in the past for spreading his efforts too widely across different areas of study and not leaving behind a major published work, Saussure nevertheless left his mark on his time, both through the invention of scientific instruments such as the helio-thermometer or the hair hygrometer, and by his contribution alongside Rousseau to the renewed enthusiasm for mountains and nature. Augustin-Pyramus de Candolle paid homage to him in 1810 by dedicating to him the genus Saussurea, declaring: "I want the name of the Alpine Saussurea to remind every botanist who traverses the Alps of the name of the naturalist who has best described this vast range of mountains."

4

3 Cour Saint-Pierre

The De Candolle House

Augustin-Pyramus de Candolle's collections of herbaria filled four rooms of his apartment at Cour Saint-Pierre! When the botanist moved from Montpellier to Geneva in 1816, it took 40 carts to transport his herbaria and library to this location.

Passiflora cuprea, from the A.-P. de Candolle herbarium, Botanical Conservatory and Garden, Geneva

Augustin-Pyramus de Candolle (1778-1841)
"The young man with the watering can"

Introduced to botany at the age of 16 in the garden of the Society of Physics and Natural History (SPHN) of Geneva, Augustin-Pyramus de Candolle became a botanist of worldwide significance. An indefatigable worker, driven by his fervent desire to leave behind a major body of work, as well as to popularize botany, he created 940 botanical plates, described 6002 new species of plants and 470 new genera according to the taxonomy of the time, representing 1/14th of the world's known species! He also motivated the creation of Geneva's Botanical Garden.

De Candolle's early work was entirely devoted to the study of the physiology and anatomy of plants, in keeping with the Geneva school embodied in particular by Bonnet. However, he soon developed an interest in the classification and determining of plants, and as Geneva did not offer sufficiently fertile ground for this, left the city for Paris in 1798. His colleagues in the Botanical Garden and at the Museum of Natural History there nicknamed him "the young man with the watering can", since he spent hours sitting on a watering can taking botanical notes. In the stimulating intellectual environment of the French capital, he developed exceptional talents as a botanist, and became noticed for his enthusiasm. He received several important commissions that were key to his reputation: writing the texts to accompany the plates in the *History of Succulent Plants* by the painter Redouté, and the rewriting of Lamarck's *French Flora*, for which he altered the arrangement and method of grouping species. His reputation thus established, he was selected by the Minister of the Interior, Champigny, to draw up an account of the French Empire's agronomic resources. This was the opportunity for the young scholar to undertake six major journeys which would give rise to geographical botany, concerned with the influence of climate on plant distribution.

In 1808, De Candolle was appointed Professor of Botany at the School of Medicine and Director of the Jardin des Plantes in Montpellier - the oldest botanical garden in France. The ideas meditated upon in the course of his early work in Paris now served as the basis for the development of his *Elementary Theory of Botany*, presented in 1813. This major work offers an in-depth reflection on the theoretical principles that govern botanical classification. It was also in Montpellier that he embarked on his highly ambitious research project: the *Systema naturale*, intended as a comprehensive catalogue of all known plants, and including a complete description and alternative names for each species. Its scope had to be reduced after the publication of the first two volumes between 1818 and 1821, and De Candolle continued his masterwork in an abridged form: the *Prodromus systematis naturalis regni vegetabilis* (known as the *Prodrome**), seven volumes of which were published during his lifetime ; after his death, the remaining volumes, the *Suites* ("Sequels"), were completed by his son Alphonse.

Acer monspessulanum, from the A.-P. de Candolle herbarium – Botanical Conservatory and Garden, Geneva

The fall of the First French Empire and the incorporation of Geneva into Switzerland in 1815 inspired De Candolle to return to his birthplace in 1816. Appointed Professor of Botany and Zoology at the Academy, he also played an active part in the public, political, scientific and social life of Geneva. He helped to found several important institutions, notably the Société de lecture reading rooms, the agricultural class at the Society of Arts, the Rath Museum, the Natural History Museum and, aware of the utilitarian nature of botany (unlike Rousseau whom he nevertheless admired and to whom he dedicated a family of plants, the *Rousseaceae*) the Botanical Garden in the Parc des Bastions in 1817.

De Candolle amassed one of the most remarkable herbaria of his day, inspiring Balzac to nickname him the "Supreme Pontiff of Plants". His international reputation, combined with Geneva's stability, encouraged important collectors to send their herbaria to the city. De Candolle relates that "my herbarium is one of the objects that have kept me most constantly occupied. [...] In 1835, my herbarium contained around 75,000 species, that is, at least 135,000 specimens". A colourful, scientifically – and socially – committed figure, convinced of the need to transmit knowledge, De Candolle was the author of more than 300 texts on a variety of subjects.

In his *Memoirs and Remembrances*, written in the manner of Rousseau's *Confessions*, he recounts his life, relates anecdotes and scenes from contemporary everyday life, and presents the origins of his scientific work.

In 1921, De Candolle's entire collections were transferred to the City of Geneva's Botanical Conservatory and Garden.

5 **Promenade de la Treille**

The Treille and its horse chestnut tree

Originally a rugged terrain covered with trees, bushes and vines (hence the name "Treille", meaning a climbing vine), the Treille was first laid out in the early 16th century. On this patch of land with its favourable south-facing aspect, the nucleus of a botanical garden was created by Jean Bauhin (1541- 1612) shortly after the Reformation.

A renowned physician, Bauhin grew medicinal plants here, mainly for demonstration purposes for his students of medical botany. To him we owe the first study of the flora of the Geneva region. Sadly, the small garden fell into disarray when its creator, the only lay member of the Academy, had to leave Geneva due to disputes with his colleagues in the clergy.

In the early 18th century, the Genevan elite styled themselves on Louis XIV's court, which advocated taking walks along shady, tree-lined paths. In 1706, lime trees were planted on the Treille, but they soon died due to the intense sunshine on the esplanade. A first row of horse chestnuts (*Aesculus hippocastanum*), a species imported into Europe in the 16th century by the French diplomat Ogier Ghislain de Busbecq, was planted in 1720, and a second row in 1721. The city then had two promaenades, the Treille and the Corraterie (known at the time as the "Parapet Promenade"). In 1726, the Belle Promenade, today's Parc des Bastions, was added. The Upper Town, with its narrow, dark alleys, was then still enclosed within its fortifications, so Sunday walks provided a breath of fresh air for inhabitants, as well as being a social occasion. Young people enjoyed them in particular – a distraction that did not please the Company of Pastors, who saw it as the cause of the breakdown of morality in the city! Careful landscaping of the walks also went hand-in-hand with a marked attraction for a return to nature, initiated by Rousseau and continued by succeeding Genevan botanists.

Marc-Louis Rigaud, then living at what is now 16 Rue des Granges, was the first to take an interest in the horse chestnuts on La Treille. In 1808, he started to observe the opening of the first leaf on the tree in front of his house. In 1818, responsibility for this was handed over to the Republic's *sautier* (the custodian of the City Hall), but the official chose to observe a different tree, which consequently became the "official horse chestnut", harbinger of the arrival of spring. The news is made public every year and the date inscribed on a tablet kept in the hall of the Council of State. This tradition also existed in Paris, where the announcement of the first leaf on a horse chestnut in the Tuileries was a pretext for a few lines by journalists lacking a story. Ever since, a short article on an event that recurs at a given time is known in France as a "*marronnier*" (horse chestnut).

The official horse chestnut

6

2 Rue de l'Athénée

Palais de l'Athénée

Built in 1863 by Jean-Gabriel Eynard and his wife near their own residence, the Palais de l'Athénée was designed to house the Society of Arts, founded, among others, by Horace-Bénédict de Saussure and by Augustin-Pyramus de Candolle, who established the agriculture class. Its architects were Gabriel Diodati and Charles Schaeck.

Monument to Charles Bonnet, created by the sculptor Jean Jaquet and the architect Pierre-David Matthey, from a design by Jean-Pierre Saint-Ours
The Geneva Library – Iconography

Charles Bonnet (1720-1793)
"The home-based naturalist"

The sculptured busts which crown each triangular pediment are the work of different artists; that of Charles Bonnet, by Charles-Louis Menn, is in a prominent position next to important figures such as Calvin, Pictet de Rochemont and Rousseau. Charles Bonnet was indeed one of the major intellectual figures in Geneva of his century.

Charles Bonnet left behind him an encyclopaedic body of work, making his mark on the field of natural history through his research into plant and animal reproduction, his demonstration of the parthenogenesis of aphids, and the effect of light and leaves on plants. In 1745, suffering from partial sight loss, he had abandoned his studies of the insect world to devote himself to that of plants - larger and therefore easier to handle.

A pragmatic naturalist, working only in his study, he absorbed himself in experiments that made him one of the leaders of naturalistic physics*, a discipline that prevailed over systematic botany in Geneva until the late 18th century. When he became Saussure's uncle through marriage, Bonnet encouraged the young man to continue his studies in the field of plant anatomy and physiology, avoiding any allusion to taxonomy. Saussure became "Bonnet's eyes" and his first research bears the stamp of his tutor; his *Observation on the Epidermis of Leaves and Petals* published in 1762 therefore follows on from Bonnet's *Research in the Usage of Leaves in Plants* (1754), which had laid the groundwork for naturalistic science in Geneva. Bonnet was interested in microscopic botany, a discipline through which he thought to develop his idea of a "scale of beings", advancing the idea that the transitions between the different kingdoms are supplemented by intermediary organisms, such as the tremella and the conferva. His works gradually become tinged with metaphysical questions, tending towards natural philosophy.

When the the Society of Physics and Natural History (SPHN) was founded in 1791, it was placed under Charles Bonnet's patronage. In 1793, the SPHN planted a small botanical garden on top of the Saint-Léger bastion. With money left by the greatly respected "home-based naturalist", the society was able to purchase tools, a greenhouse and flowerbeds. A monument designed by the sculptor Jean Jaquet was dedicated to Bonnet and set in the middle of the garden.

7 The Saint-Léger Bastion

The Botanical Garden of the Saint-Léger Bastion (1793–1830)

(a) **Old walls that safeguard urban biodiversity**
No traces remain today on the Saint-Léger bastion of the scientific activities carried out there for many decades. We can, however, observe the wall of moss and lichen beneath us, appreciated by the Botanical Conservatory and Garden as an area for the preservation of urban biodiversity. The wall was built between 1537 and 1539 and its antiquity has enabled the development over the centuries of a wealth of fauna and flora. Its orientation has also led to the formation of a small ecosystem almost like that of the South of France. It is consequently host to a multitude of moss and lichen species, some not often found in Geneva or even in Switzerland.

The first, if unsuccessful, attempt to create a botanical garden in Geneva was made by the naturalist and pharmacist Henri-Albert Gosse, who in 1790 put forward a proposal to the Society of Arts to rent the Cornavin bastion for this purpose. The initiative was taken up again by the Society of Physics and Natural History (SPHN) in 1793 on the site of the Saint-Léger bastion. Its aim was to unite in a single space the six private gardens used for scientific purposes then scattered around the Geneva countryside. Of the twelve founders of the SPHN, almost half had links with botany: three cultivated the research gardens – Henri-Albert Gosse, Horace-Bénédict de Saussure and Isaac-Louis Gaudy; two taught botany – Jean-Pierre-Étienne Vaucher and Jacques Necker de Saussure, while most of them, like Jean-Antoine Colladon and Louis Jurine, possessed a herbarium, a fashionable activity at the time, inspired by Rousseau's vision of man and nature.

The development of a botanical garden by the SPHN was in response to its primary mission of systematically describing the region from a natural history perspective. Created in a sunny location on top of the 16th century fortifications, the garden covered 1800 square metres of land donated by the Genevan Government, on the condition that the teaching of natural sciences was encouraged there. A small building that contained the SPHN herbaria was therefore used for this purpose. The garden also had a fountain, a greenhouse and flowerbeds. The teaching, derived from the precepts of Charles Bonnet, was moreover based on the Linnaean system* of classification, which had gradually replaced Von Haller's nomenclature (see page 13). During Geneva's annexation to France from 1798 to 1813, the Botanical Garden continued its work by special permission of the Ministry of War.

With the return of De Candolle to Geneva and the creation of the Botanical Garden in the Bastions Park in 1817, the Saint-Léger garden became the property of its director Michel Micheli de Chateauvieux and continued to be cultivated until his death in 1830. From December 1798 to the end of 1821, meteorological observations were performed here, prior to the construction of the observatory at Saint-Antoine (today known as the Promenade de l'Observatoire). Here, the exceptional temperatures of what was called "the year without summer" were measured.

"The year without a summer"

On 5 April 1815, the composite volcano Tambora erupted on the island of Sumatra in Indonesia. The eruption lasted three months and was one of the most powerful and deadliest ever recorded. Gigantic ash clouds deposited particles in the upper atmosphere and circled the globe several times, causing abnormally low temperatures and torrential rains throughout the northern hemisphere.

In 1816, snow fell in Geneva in mid-May, the lake waters flooded the lower part of the city and the Eaux-Vives district. At Longemalle, the waters reached up to the Rue Neuve, at Molard, carriages and boats crossed paths, and the river Arve overflowed at Jonction... Epidemics spread, due to bad sanitation caused by the catastrophe. Damaged roads made procurement of supplies difficult and expensive. Stocks of wheat, already severely depleted during the years of French occupation, were in short supply and had to be rationed; the Genevans were starving. Crops were mortgaged and grapes froze on the vines. These events undermined social order and the people revolted. To help the population, in addition to distributing soup, the land that was due to house the future Botanical Garden at Bastions was used instead to plant potatoes. Even though the varieties best adapted to the region were selected, the harvest was poor. A violent "potato riot" ensued, after which De Candolle gave the speech "A Genevan to his fellow citizens" in which he called on the inhabitants to remain calm, on pain of re-annexation by France. The inauguration of the Botanical Garden in November 1817 was therefore a discreet affair, with no official speeches, to avoid inciting any popular fervour while famine was still rife.

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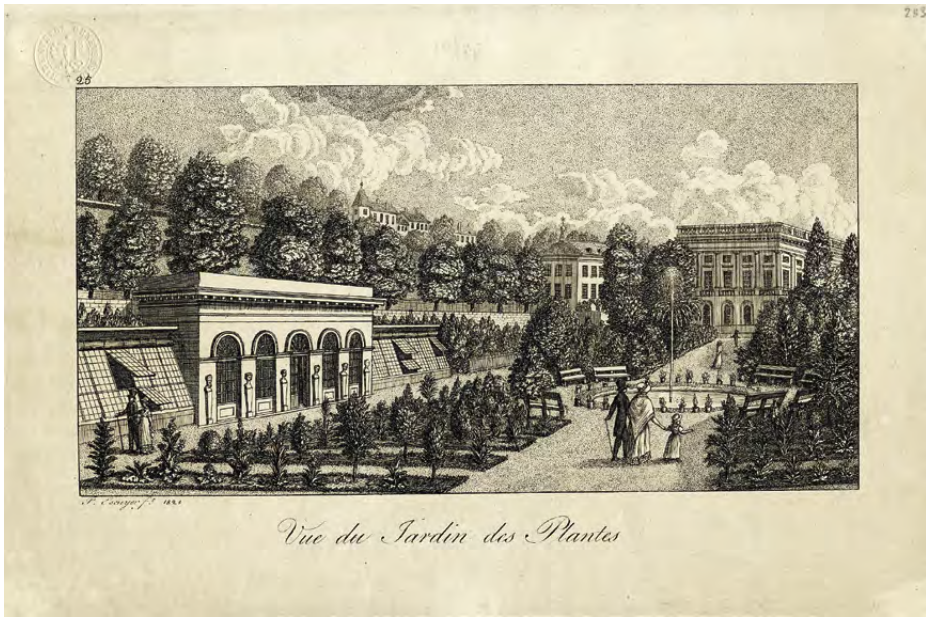
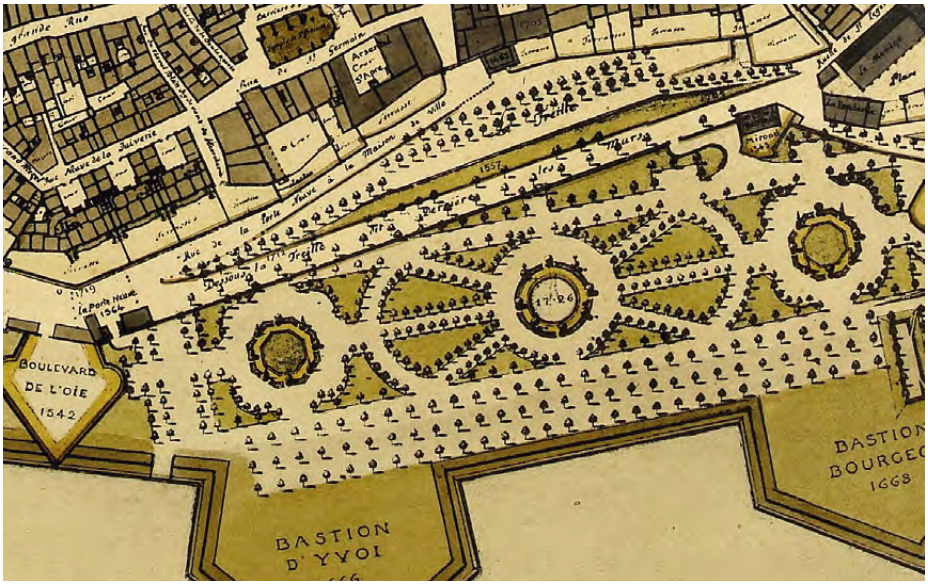
8 **Parc des Bastions**

The Botanical Garden in the Parc des Bastions (1817–1904)



The Botanical Garden at Bastions, engraving by Pierre Escuyer, 1824 – The Geneva Library – Iconography

In the early 18th century, in addition to Geneva's two promenades, the city's three gates gave its residents the opportunity to go out into the surrounding countryside. However, an external event was to alter the urban landscape, forcing the authorities to define new areas for walks. The Great Plague of Marseilles compelled the government to severely restrict travel in and out of the city. Deprived of their usual Sunday outings, the Genevans secured the development of an area between the Bourgeois and Yvoi bastions, already planted since 1724 with horse chestnuts, which in 1726 became the "Belle Promenade", renamed a century later the "Bastions Promenade". This rectangular space, rented out until then to private individuals for the growing of vegetables, was now laid out in the "French style" with a circular space in the middle of a central axis from which alleys fanned out to join symmetrical octagonal areas at each end, the whole being decorated with groves of trees and flowerbeds. The paths were lined with elms, limes and horse chestnuts. In 1740, the Belle Promenade was extended towards the theatre constructed on Place de Neuve when the Porte Neuve gate was rebuilt. Considered the most beautiful promenade in Geneva, even more pleasant than the Luxembourg Gardens in Paris, it offered a view over the bastions and the surrounding countryside that stretched as far as the eye could see.



Historic cadastral plan (detail), 1726, Billon, Micheli Du Crest, Plojoux – Geneva Library – Iconography

At the end of the 18th century came a period of decline. As the Belle Promenade was not well-maintained, its layout was simplified. During the revolutionary period from 1792, and then annexation to France from 1798 to 1813, the promenade was renamed the "Lycée de la patrie" (Lyceum of the Fatherland). Although used as a place for civic commemorations, such as one in 1794 in honour of Rousseau, who had become an emblematic figure for the population, it was also the scene of a massacre in the same year. After an uprising led by extremists, 37 people were sentenced to death by the Revolutionary Tribunal, and seven of them were shot on the promenade. In 1795, the first public monument was erected on the central path, a bust on a square column in honour of Jean-Jacques Rousseau, the traces of which have been lost today. During the Restoration, from 1815 onwards, major transformation work was carried out here: the return to the city of Augustin-Pyramus de Candolle, a passionate botanist, inspired the authorities to create a Botanical Garden on the area of land below the Petit-Languedoc (now the Rue de la Croix-Rouge). The choice of this location for the garden was not only justified by its advantageous south-facing position. Apparently, De Candolle, the future director and instigator of the garden, also wished to erase from the population's minds the bad memories associated with the site. A subscription started by people close to the Society of Arts also received generous contributions from citizens, giving the botanist the necessary means to fulfil his dream.

(b) **Gingko tree**
The gingko (*Gingko biloba*) belongs to one of the oldest known family of trees, already in existence 40 million years before the arrival of the dinosaurs. The first gingko in Europe was planted in 1730 in the Botanical Garden in Utrecht, when young shoots of the tree were brought back from Japan by the German physician and botanist Engelbert Kaempfer. However, this was a male specimen. The first female gingko in Europe, necessary for grafting and propagation, was found in a garden in the Satigny region, at the home of Paul Gaussen, a distinguished amateur dendrologist (the science and study of wooded plants). De Candolle noticed this specimen and thus enabled the cultivation of gingkos at the Bastions site and elsewhere in Geneva. Remarkable for its foliage and imposing stature, the gingko, however, has fruits which emit an unpleasant odour on decomposing.

Nevertheless, the period was not conducive to the installation of the Botanical Garden and the project was rejected. In 1816-1817, there was famine in the city due to the climatic changes caused by the eruption of the Tambora volcano. It was decided to cut down all the old horse chestnuts and plant a field of potatoes to provide food for the population, as stocks of wheat were very low. Unfortunately, the yield was disappointing, resulting in new popular uprisings. De Candolle's Botanical Garden was therefore opened discreetly in November 1817, just after the meagre potato harvest. However, the charismatic De Candolle was soon able to mobilize people from both botanical and agronomic circles and from the population itself to help with the creation of the garden: between November and the start of winter, some 600 species were planted, the first being a species of clematis (*Clematis recta*), according to the order stated in the Prodrome*. The part of the garden located between the Miron and Saint-Léger bastions was sold to Jean-Gabriel Eynard for the construction of his residence there between 1817 and 1821, in front of which extended a large private garden encroaching on the former Belle Promenade.

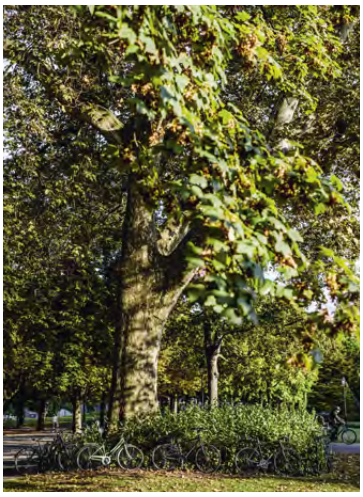
(c) **Japanese red cedar "Bandai-sugi"**
The highly aromatic resin of the Japanese red cedar (*Cryptomeria japonica "Bandai-sugi"*) provides an incense much sought after by Buddhist monks. Its wood is used to make tea caddies.

ⓓ **Incense cedar**
On Vancouver Island, the inner part of the bark of the Incense Cedar (*Calocedrus decurrens*) is used to make waterproof coats, sails and ropes..

De Candolle had high hopes for the new Botanical Garden. As a public institution, it had to be an educational tool, permitting the development of collections and scientific studies. Construction work took place between 1817 and 1820, in parallel with that for the Palais Eynard, and led by the same architect, Guillaume-Henri Dufour; the gardener's house, an orangery and two hothouses were erected against the old city wall below Petit-Languedoc. Fifty flowerbeds were laid out by the nurseryman Dailledouze, divided into three sections: near the Palais Eynard were the useful plants in the agronomy section; in the middle, the School of Botany's plants with a central circular basin; and near Place de Neuve, specimens for sale and for experiments. The Botanical Garden was devised as a living book in which specimens were organised according to the principles of natural classification*, to enable students to recognize the links between species. The Botanical Conservatory was built from 1824 to 1826, financed by generous donors. It was used to house seeds, herbaria and a library and to provide study rooms. The monument to Rousseau was taken down, but De Candolle was careful to replace it with a bust of him in front of the orangery, alongside those of other Genevan botanists: Chabrey, Trembley, Bonnet, Saussure and Senebier, thus portraying Rousseau too as a botanist and erasing the revolutionary connotations of the previous monument. The garden's central circular basin was moved in 1910 to the inner courtyard of the newly-built Museum of Art and History, due to the construction of the Wall of the Reformers.
The southern side of the plot, an area quite separate from the Botanical Garden, retained its function as a promenade – though reduced in size by two-thirds – lined with old elms and lime trees with the addition of some horse chestnuts. In 1850, the shape of the promenade was further modified with the dismantling of the fortifications. In 1855, the walk that had been renamed as the "Citizens' Bastion Promenade", and later "Bastions Promenade", was officially handed over to the City of Geneva by the State.

ⓔ **Common catalpa**
Catalpa means "bean" in the Cherokee language, in reference to the long decorative seed pods that appear on the Common Catalpa (*Catalpa bignonioides*) in late summer.

Owing to De Candolle's fame, gifts from major European botanical gardens were sent to enrich the collections. In 1832, there were about 6000 species being cultivated there, including 1000 varieties of vines and fruit trees and 4700 botanical species. In 1845, the Conservatory already housed numerous collections, including those of Gosse, Necker, Colladon and von Haller, with the latter's being the first herbarium of importance given to the City. In 1869, the famous Delessert herbarium was transferred there. Alpine plants, included in De Candolle's plans for the Botanical Garden since 1816, were regularly added to the garden from 1832 onwards. Growing alpines on tufa limestone was a specialty developed in 1846 by A.-P. de Candolle's son, Alphonse, then director of the Botanical Garden, and by the gardener Louis Gay de Vandoeuvres. This was a great success and was to influence other botanists.
From 1850, the vines and fruit trees were gradually removed in favour of lawns, flowerbeds and shrubs. Experiments were carried out with food crops, such as squash, corn, beans, etc. By the early 20th century, completely surrounded as it was by roads and buildings, no further development of the garden was possible at the Bastions site, especially as it was planned to erect the memorial to the Reformation there. The decision was therefore taken in January 1901 to move the garden. The first idea was the Villa Mon Repos, as suggested by Philippe Plantamour on bequeathing his property to the City in 1898, but it was finally transferred to the Sécheron district in 1904, south of the Ariana estate left to the City by Gustave-Henri Revilliod.



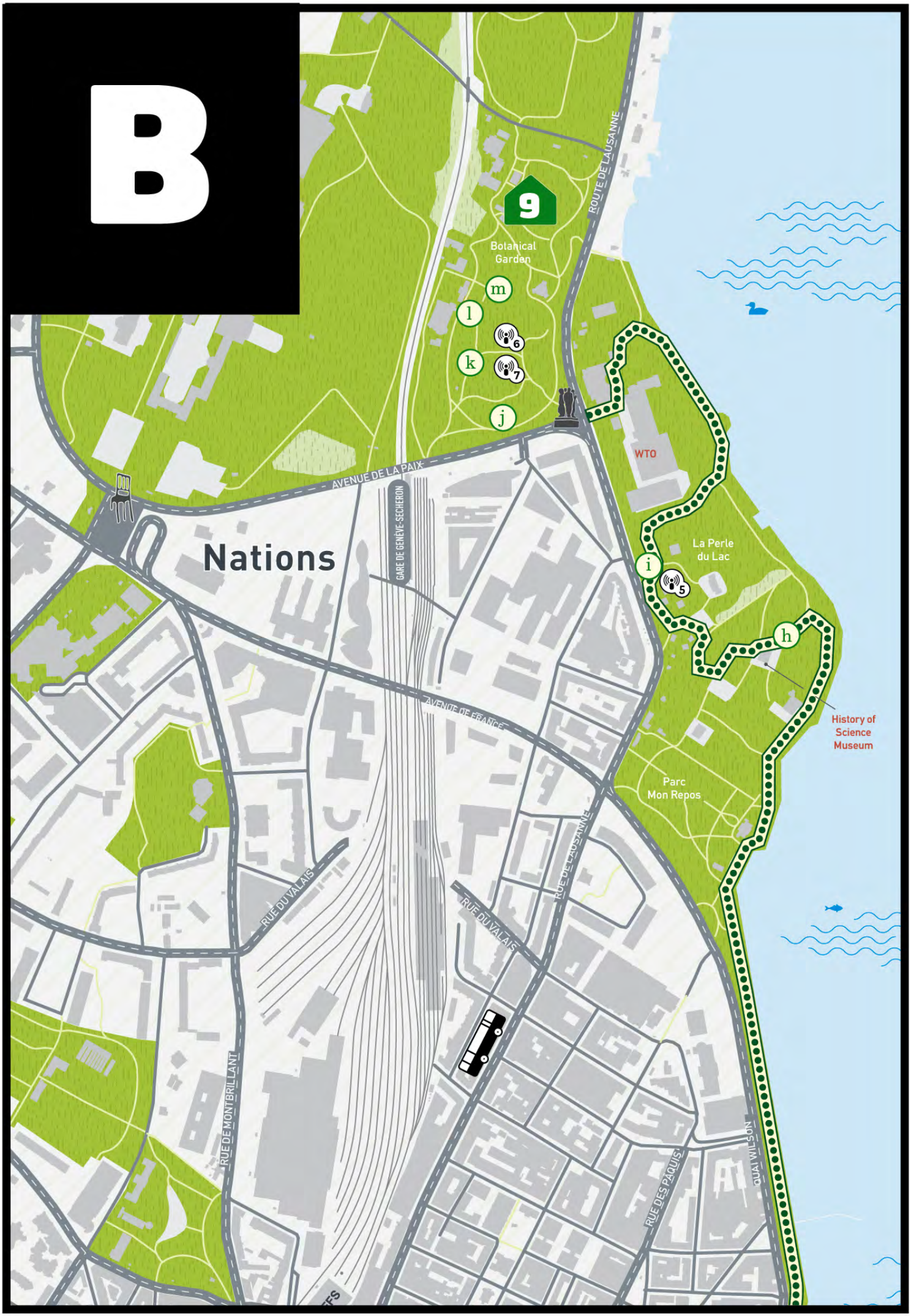
ⓕ **Common plane tree**
This plane tree (*Platanus x hispanica*), thought to be 120 years old, was transplanted from the Place des Alpes in front of the University in 1878. It's remarkable for the magnificent base formed by its roots, now protected by a barrier to prevent them from being trampled. Its long branches are much appreciated by students for the shade and freshness they afford in the summer.

"Petit-Languedoc"

The present-day Rue de la Croix-Rouge was known in the 18th century as "Petit-Languedoc". Due to its sunny exposure, it benefits from a milder climate than the rest of the city, and so Huguenot refugees who had fled the south of France came here to warm themselves, unaccustomed as they were to Geneva's cooler temperatures. This custom gave its name to the street, where honeyberry trees (*Celtis australis*) – typical of Mediterranean landscapes – were planted in 1919. The current name "Rue de la Croix-Rouge" denotes the fact that the creation of the International Committee of the Red Cross took place on this street at the Palais de l'Athénée.

ⓖ **Île Rousseau**

The Île des Barques, renamed Île Rousseau (Rousseau Island) in the 1830s, forms a small garden on the Rhone planted with Lombardy poplars (*Populus nigra L. var. Italica Münchh.*), like those that shaded Rousseau's first resting place in Ermenonville, on the Île des Peupliers (Poplar Island). The eight poplars that embellish the island today were planted in 2010, replacing ones that had been there since the site was first dedicated to the philosopher.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History of Science Museum
Parc Mon Repos
RUE DU VALAIS
RUE DE LAUSANNE
RUE DU VALAIS
RUE DE MONTBRILLANT
QUAI WILSON
RUE DES PAQUIS

ⓗ **Tulip tree**

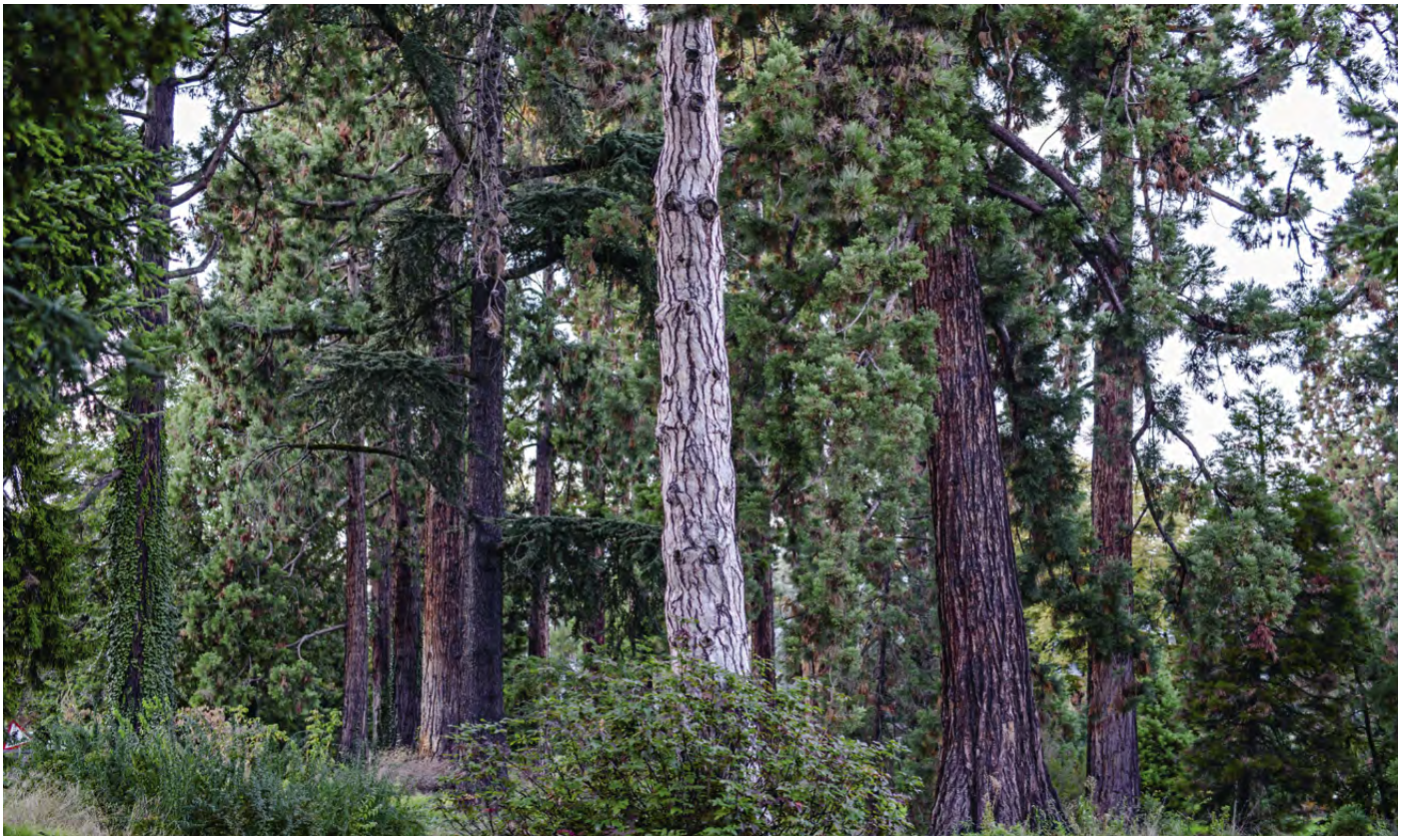
In the Parc de La Perle du Lac, near the History of Science Museum, you can admire one of the most beautiful tulip trees (*Liriodendron tulipifera L.*) in the city. Introduced to Geneva by Horace-Bénédict de Saussure in the late 18th century, this historic tulip tree owes its name to its large, pale yellow flowers resembling tulips that bloom in summer.

5

ⓘ **Giant redwood grove in Parc Barton**

In the mid-19th century, the first seeds of Californian giant redwoods (*Sequoiadendron giganteum (Lindl.) Buchholz*) were brought over from the United States to Europe, where they aroused the curiosity of scientists and great interest among the population, and they began to be found in gardens. In 1858, Sir Robert Peel purchased what is now the Parc Barton, where he made a small-scale replica of a Californian forest planted with giant redwoods, through which a small path winds.

His daughter, Alexandra Barton Peel, bequeathed the property to the Swiss Confederation in 1935, on condition that it was never divided up and that the trees flourishing there were not cut down. Due to the climate and the shallow depth of the soil, these redwoods have not grown as high as those on the other side of the Atlantic, but they are still some of the oldest trees in Geneva and a point of interest in the city.



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1 Chemin de l'Impératrice

Tel +41 22 418 51 00
Web cjbg-geneve.ch
Garden:
25 October – 31 March: 8AM-5PM; 1 April – 24 October: 8AM-7:30PM

Botanical Conservatory and Garden

(m) **Common plane trees:** The majestic alignment in the Botanical Garden of five plane trees (*Platanus acerifolia (Aiton) Willd.*), also known as *Platanus x hispanica*) dates back approximately 300 years, making them perhaps some of the oldest examples of this plane tree in the region. This highly vigorous species, widespread since the early 19th century, is the result of a natural hybridization between two far-distant species that probably appeared in Oxford in the 17th century: *Platanus orientalis*, originally from Turkey and *Platanus occidentalis*, from Virginia. At the time they were planted, this type of alignment was a way of marking the boundary between two properties or different types of agricultural activity.

The Botanical Conservatory and Garden opened at its present location in 1904. The building known as La Console, designed by the architect Louis Juvet and constructed on the Place de la Consulla, from which it appears to have inherited its name, originally housed the Conservatory and its herbaria. Since 2015, it has been home to most of the CJBG's cryptogamic collections, that is, mainly mosses, fungi, lichens and algae, open to researchers working on these scientific areas. The garden was moved from the Bastions to the Ariana estate (bequeathed to the city in 1891), which then stretched down to the lake. The landscape architect Jules Allemand, who designed it, favoured winding paths in a typically English style and a small artificial lake with both aesthetic and didactic functions.

Allemand also created the garden's landscaping masterpiece, the rockeries, which replicate the geographical regions of Switzerland and the alpine world in general, on various types of rock. This alpine garden has 110 flowerbeds containing some 3500 plants – 2800 different taxa* – covering an area of about one hectare. The garden grew progressively from 7.5 ha to 18 ha after the acquisition of the Duval lands in 1954 and those of Pregny in 1978, and then to 28 ha when the State of Geneva entrusted maintenance of the Penthes estate to the CJBG. Another agreement with the State gave the CJBG the possibility to build greenhouses over a hectare of land, where 20,000 plants are now grown each year to decorate the gardens.

After several years of study and searching for solutions, the City of Geneva's Botanical Garden has been 100% organic since 1 January 2015 – an ambitious and unique project in Western Switzerland.

The greenhouses of the De Candolle era had remained at the Bastions site for budgetary reasons, and were taken down in 1910 to make way for the Wall of the Reformers. In 1910-1911, the architect Henri Juvet built a conservatory along the old Chemin de Varembé, composed of two adjacent but distinct parts: a conservatory and a greenhouse, producing an asymmetrical effect. This complex was subsequently moved to its present location following the various urban developments associated with the construction of the Palace of Nations. In 1935, a new wing, symmetrical to the first, was added to the conservatory. This elegant building of iron and glass brings the Botanical Garden's conservatory into line with others of this type, very much in fashion in the second half of the 19th century.

(j) **Drooping Norway spruce**
This is one of the finest and oldest examples of the drooping Norway spruce (*Picea abies L. cv. Inversa*), to be found in all the parks and botanical gardens of Europe. The cultivated form of the Red fir, a very common species in European forests, its weeping and slowly-growing branches give this tree a truly fascinating silhouette, caused by a genetic mutation that appeared during its cultivation.

Between 1972 and 1973, several pavilion style buildings were erected by the architects Jean-Marc Lamunière and Alain Ritter parallel to the railway lines. Of these constructions, the highly-renowned public library specializing in botany was renovated in 2016. It contains practically all the scientific publications and journals published in the fields of plant taxonomy and world flora, i.e. over 20,000 volumes and 4400 scientific journals, and is considered one of the most important internationally for the science of botany.

It also possesses archival documents signed by the greatest botanists.

Preserved in the basement, on 18 kilometres of shelving, is one of the largest herbaria in the world, containing more than 6 million specimens. Of these, the two most important of the Genevan collections are the De Candolle herbarium (bequeathed to the city in 1921) and the Boissier herbarium (entrusted to the CJBG in 1943). The international renown of Augustin-Pyramus de Candolle and his descendants, as well as their publication over time of the world-famous *Prodrome** with its *Suites*, has encouraged people, ever since the foundation of the Botanical Garden at the Bastions site, to send plant collections from new countries and herbarium plates regularly to the CJBG – it is even considered

an honour to forward them to Geneva. The plates of all these herbaria represent the work of generations of botanists, leading to recognition by UNESCO of Geneva's botanical tradition as an Intangible Cultural Heritage, and one of the 167 "Swiss living traditions".

"The Flora of the Ladies of Geneva"

In the course of his work in Montpellier, De Candolle had the opportunity to study some 1400 drawings of plants from Central America, brought back from expeditions there by the Spanish naturalist José Mariano Mociño. The watercolours, painted from nature by excellent artists, were to be made into a publication for the King of Spain, who wished to know the extent of the natural wealth of his American possessions. The political and military situation in the country forced the king to flee, as did Mociño, who took refuge in Montpellier. The book project was abandoned and Mociño, already advanced in years, gave the drawings to De Candolle, who discovered species in them that were new to science. However, by the time De Candolle had moved back to Geneva in 1816, Mociño had already received permission to return to Spain and had reclaimed his drawings, which belonged in fact to the Spanish Crown.

De Candolle had no choice but to have reproductions of the plates made. He recruited nearly 120 "Ladies of Geneva" with an aptitude for drawing, and over about ten days 860 plants had been copied! On Mociño's death, all trace of the originals was lost for over a century and the "Flora of the Ladies of Geneva" was the main scientific testimony of the expedition to New Spain until the originals resurfaced in 1981 at the Hunt Library, after having been purchased in the utmost secrecy. Thanks to this collection, De Candolle was able to describe 300 new genera and species.

Eupatorium quadrangulare, from the Sessé y Lacasta, M. de & J. M. Mociño herbarium – Botanical Conservatory and Garden, Geneva

ⓚ **English Oak**
Near the Avenue de la Paix stands a magnificent three-hundred-year-old tree: an English oak (*Quercus robur L.*). This European tree provides food for wild boars and their domesticated cousins with its acorns.

ⓛ **Stone Pine, Umbrella Pine**
This tree, which reminds us of the pines of Rome (*Pinus pinea L.*) is exceptional in that it is not often found in parks in this region, as its natural habitat is around the Mediterranean. Its edible seeds form one of the ingredients of the famous Italian pesto.

The Naturalists in Cultural Institutions

The many original handwritten and printed documents, engravings, paintings, busts, sculptures and scientific instruments from this period found in Geneva's cultural institutions show the extent to which botany has marked and is part of the historical DNA of the city. The following non-exhaustive list provides an overview of these. Please note that not all items are accessible to the general public.

The Geneva Library – Centre for Iconography
2 Passage de la Tour, 1205 Geneva
Tel +41 22 418 46 70
Web bge-geneve.ch
By appointment only

- Jean-Jacques de Boissieu, *The Botany Lesson* [by Rousseau] 1804 – etching
- Georges-Frédéric Mayer,*Ermenonville, Jean-Jacques Rousseau herborising*, c. 1770 – etching and intaglio on watercolour tinted paper
- Jens Juel, *Portrait of Charles Bonnet*, 1777 – oil on canvas
- Jens Juel, *Jean Senebier*, 2nd half of the 18th century – oil on canvas
- Joseph Hornung, *Augustin-Pyramus de Candolle*, 1839 – oil on canvas
- Pierre Escuyer, *Geneva, Bastions Promenade: Botanical Garden*, 1824 – copper engraving
- Jean-Gabriel Eynard, *Geneva, Bastions Promenade: the Botanical Garden*, mid-19th century – daguerreotype
- Geneva, *Greenhouses at the Botanical Garden*, 2nd half of the 19th century, albumen photographic print glued to cardboard
- Geneva, *Bastions Promenade: Plan for a Future Botanical Garden*, 1st half of the 19th century – watercolour tinted drawing on paper

The Geneva Library's Centre for Iconography has a large collection of paintings, engravings, drawings, photographs and maps relating to Genevan botanists and the Botanical Garden.

The Geneva Library – Voltaire Museum
25 Rue des Délices, 1203 Geneva
Tel 41 22 418 95 60
Web bge-geneve.ch/voltaire
Mo – Fr: 9AM-12AM and 2PM-5PM

Eugène L'Huillier, *Signed, hand-written letter to Hippolyte Buffenoir*, Geneva, 10 June 1913: contains thanks for his appointment as an Officer of the Academy, and mention of a bust of Jean-Jacques Rousseau. This letter is accompanied by two undated hand-written notes by Hippolyte Buffenoir, concerning correspondence and a report on the Geneva Botanical Garden, mentioned in L'Huillier's letter.

Bodmer Foundation
19-21 Route Martin-Bodmer, 1223 Cologny
Tel 41 22 707 44 36
Web fondationbodmer.ch
Tu – Su: 2PM – 6PM

Original or partly original editions of works by Augustin-Pyramus de Candolle:

- *Synopsis plantarum in flora gallica descriptarum* (Paris, Agasse, 1806)
- *Théorie élémentaire de la botanique, ou exposition des principes de la classification naturelle, et de l'art de décrire et d'étudier les végétaux* (Paris, Déterville, 1813)
- *Flore française, ou descriptions succinctes de toutes les plantes qui croissent en France…* (Paris, Desray, 1815, 3rd expanded ed.)
- *Botanicum Gallicum, seu Synopsis plantarum in flora gallica descriptarum* (Paris, veuve Bouchard-Huzard, 1828, 2nd expanded ed.)

Works by Jean-Jacques Rousseau :

- *La Botanique de Jean-Jacques Rousseau, ornée de soixante-cinq planches, imprimées en couleurs, d'après les peintures de P.J. Redouté…* , Paris, Delachaussée & Garnery, Year XIV (1805). Folio, X-122 pp. Complete with 65 plates. Contemporary binding. Original edition. Ref.: Brunet, IV, col. 1425; Quérard, VIII, 195

Botanical Conservatory and Gardens
1 Chemin de l'Impératrice, 1292 Chambésy-Genève
Tel +41 22 418 51 00
Web cjbg-geneve.ch
Garden: 25 October – 31 March: 8AM – 5PM
1 April – 24 October: 8AM – 7:30PM

- L.-E. Dorcière, Jean-Pierre-Étienne Vaucher, 1842 – terracotta bust
- *Prodrome* by Augustin-Pyramus de Candolle
- Edmond Boissier's ice axe and hiking stick, as well as his travel writing set in the form of a green dyed Morocco leather cylinder, containing a pencil case, an inkpot and a sander.
- Two ovoid collecting boxes for herbal specimens, one attributed to John Briquet and the other to Étienne Joukowsky (1879)
- Rectangular aluminium box for keeping plants pressed between sheets of paper, carried by John Briquet during his expedition to Corsica in 1906 accompanied by Émile Burnat
- Busts of Jean-Jacques Rousseau, John Briquet and Augustin-Pyramus de Candolle

House of Rousseau and Literature (MRL)
40 Grand-Rue, 1204 Geneva
Tel +41 22 310 10 28
Web m-r-l.ch
Tu – Su: 11AM – 5:30PM
Founded in 2012, the MRL is a place for encounters and debate, a showcase for writers and their books, and a creative venue inspired by the works and ideas of Rousseau, to whom a space is dedicated on the first floor.

Art and History Museum
2 Rue Charles-Galland, 1206 Geneva
Tel +41 22 418 26 00
Web mah-geneve.ch
Tu – Su: 11AM – 6PM

- Maurice Quentin de La Tour, Portrait of Jean-Jacques Rousseau, 1753 (?), Cabinet d'arts graphiques des Musées d'art et d'histoire, Genève, Legs Jean-Charles Coindet – pastel on paper
- Jean-Pierre Saint-Ours, Horace-Bénédict de Saussure, undated, Cabinet d'arts graphiques des Musées d'art et d'histoire, Genève – aquatint
- James Pradier, Augustin-Pyramus de Candolle, 1845 – bronze bust

The Art and History Museum also owns a collection of engravings and medals portraying the great Genevan naturalists.

History of Science Museum
Parc de la Perle du Lac, 128 rue de Lausanne, 1202 Geneva
Tel +41 22 418 50 60
Web museum-geneve.ch
Su – Mo: 10AM – 5PM

- Microscope belonging to HB de Saussure, a gift from his uncle Charles Bonnet in 1762
- Saussure's field kit for expeditions in the Alps

Naturalists in Geneva

Street name : Jean-Jacques Rousseau, Augustin-Pyramus de Candolle, Horace-Bénédict de Saussure, Jean Senebier, Charles Bonnet
Statues and busts:
Parc des Bastions: Pierre-Edmond Boissier by Hugues Bovy; bust of François-Jules Pictet-De la Rive by Hugues Bovy; erratic rock dedicated to Henri-Albert Gosse by Hugues Bovy; bust of Augustin-Pyramus de Candolle by James Pradier (copy of the Art and History Museum original);
Palais de l'Athénée: Jean-Jacques Rousseau by Charles-Louis Menn, Charles Bonnet by Charles-Louis Menn; Horace-Bénédict de Saussure by Auguste Frédéric Dufaux; Île Rousseau: statue of Jean-Jacques Rousseau by James Pradier;
Cimetière des Rois: Saussure, Candolle
Schools: Collège Rousseau, Collège de Saussure, Collège De Candolle