

☞ Healing & Teaching Gardens  
 ☞ Treasure Houses, of economic plants  
 ☞ Status Symbols  
 ☞ 'Gardens of Eden'  
 ☞ 'Arks', conserving species

## Botanic Gardens

### in

## World History

DLBS25  
History & Criticism of Landscape Design

**Dr. Jeannie Sim 2016**

**(a) Garden History Scholarship:**

Sim, J.C.R. 1990, *Conservation of Historic Botanic Gardens*, Unpublished Master's degree dissertation submitted in fulfillment of the requirements for the degree Master of Arts in Conservation Studies, from the Institute of Advanced Architectural Studies, University of York, York, UK.




Sim, Jeannie, "Botanic Gardens" pp.172-175 and "Fernery" pp. 454-456. In Shoemaker, Candice A. 2001. *Chicago Botanic Garden Encyclopedia of Gardens*. Chicago: Fitzroy Dearborn Publishers.

Sim, Jeannie, 54 contributions in Aitken, Richard and Looker, Michael (eds) 2002. *Oxford Companion to Australian Gardens*. Melbourne: Oxford University Press.

**(b) Heritage Landscape Architectural Practices:**

Sim, JCR 1995, *Brisbane City Botanic Gardens Conservation Study, Alice Street, Brisbane: Final Report* for the Brisbane City Council, Dept. of Recreation and Health, Parks and Gardens Branch completed October 1995. Unpublished consultant's report.

Sim, JCR 2005, *Review of Conservation Plan for Old Brisbane Botanic Gardens*, Stage 1 Final Report, for City Design/Recreation and Parks Section, Brisbane City Council. Unpublished consultant's report.

Why I have something to contribute... **Botanic Gardens in World History**



Ellis Rowan  
National Library of Australia

Typical facilities and compartments:

HERBARIUM  
LIBRARY  
MUSEUM  
(of Economic Botany)  
LIVING PLANT COLLECTIONS (labelled, etc.)  
NURSERY  
Other Maintenance facilities  
VISITOR Centre / Shop

**BOTANIC GARDENS** are collections of living plants that nowadays have four major functions or purposes:

scientific inquiry  
botanical and horticultural education  
public recreation  
landscape aesthetics.

A specific kind of botanic garden is the **arboretum** (pl. arboreta), a collection that concentrates on living woody shrubs and trees. **THERE IS NO SUCH THING AS A STANDARD BOTANIC GARDEN.** [Sim 2001, 172]

**Defining "BOTANIC GARDEN" (pt 1)**

*Botanic Gardens in World History* 3



Palmhouse at RBG, Edinburgh [https://en.wikipedia.org/wiki/Botanical\\_garden](https://en.wikipedia.org/wiki/Botanical_garden)

**BOTANIC GARDENS CONSERVATION INTERNATIONAL (BGCi)** has considered what makes a botanic garden different from a public park or pleasure gardens. In the **International Agenda for Botanic Gardens in Conservation** the definition of a botanic garden is as follows:

"Botanic gardens are institutions holding documented collections of living plants for the purposes of scientific research, conservation, display and education."

<https://www.bgc.org/resources/1528/>

**Defining "BOTANIC GARDENS" (pt 2)**

*Botanic Gardens in World History* 4

- availability of plants for scientific research
- display of plant diversity in form and use
- display of plants of particular regions (including local)
- plants sometimes grown within their particular families
- plants grown for their seed or rarity
- major timber trees
- plants of economic significance
- glasshouse plants of different climates
- all plants accurately labelled
- records kept of plants and their performance
- catalogues of holdings published periodically
- research facilities utilising the living collections
- studies in plant taxonomy
- examples of different vegetation types
- student education
- a herbarium
- selection & introduction of ornamental and other plants to commerce
- studies of plant chemistry (phytochemistry)
- report on the effects of plants on livestock
- at least one collector maintained doing field work

In a remarkable paper on the role of botanical gardens, **Ferdinand Mueller** (1825–1896), the director of the Royal Botanic Gardens, Melbourne (1852–1873), stated, "in all cases the objects [of a botanical garden] must be mainly scientific and predominantly instructive". He then detailed many of the objectives being pursued by the world's botanical gardens in the middle of the 19th century, when European gardens were at their height. Many of these are listed below to give a sense of the scope of botanical gardens' activities at that time, and the ways in which they differed from parks or what he called "public pleasure gardens":

[https://en.wikipedia.org/wiki/Botanical\\_garden](https://en.wikipedia.org/wiki/Botanical_garden)

**BG according to F. von Mueller 1871**

*Botanic Gardens in World History* 5

**OVERVIEW of CONTENTS**

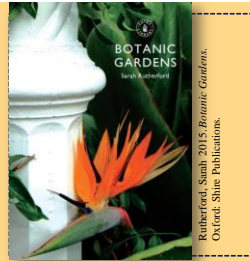
~ What is a BOTANIC GARDEN? Arboretum?

**CHRONOLOGICAL OVERVIEW:**

- ❖ Physick Gardens and herbal medicine
- ❖ Science (Botany), Herbaria and living plant collections
- ❖ Colonial Expansion and botanic gardens
- ❖ Contemporary botanic gardens

**ARRANGEMENTS (design approaches)**

Summary



Rutherford, Sarah 2015 *Botanic Gardens*. Oxford: Shire Publications.

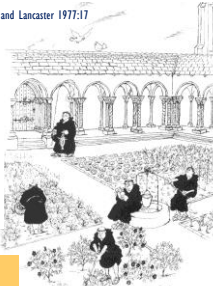
*Botanic Gardens in World History* 6

Scott-James and Lancaster 1977:17

This cartoon is an imaginary monastery garden in a cloister. Cloisters enabled peripatetic learning (Socrates' method) by walking and reading/talking, round and round the verandah like construction.

They did not put flowers and vegetables inside the contemplative cloister (and they didn't have corn at this time!)

But I love the image of monks hoisting up their skirts to garden (and revealing hairy legs!)



Botanic Gardens in World History 7

Healing & Teaching Gardens

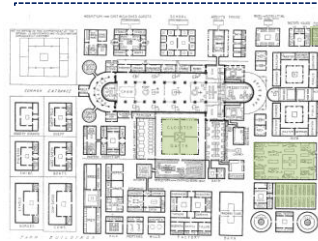


Fig. 103.103. Plan of the Benedictine Monastery of St. Gall, 830. Key plan by the Rev. R. Willis. Source: <http://www.artsandarchitecture.org.uk/images/00/06/75/03/3479/9416/dk14088a/332a7080-454d.html>

← Benedictine monastery preferred layout, plan found in Monastery of St. Gall, Switzerland (drawn c. 830).

Self-contained religious communities, often in the country (away from cities)

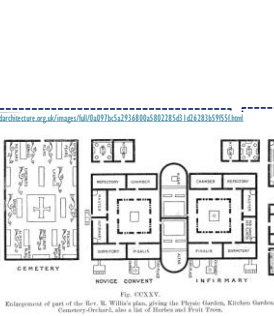
Outside (garden) spaces included the cloister garth, a medicinal herb (physick) garden, a cemetery that doubled as an orchard, and a kitchen garden

Monasteries and Convents were frequently the Nursery suppliers to the nobility i.e. they were important business enterprises.

MEDIEVAL MONASTERY Gardens

Botanic Gardens in World History 8

Fig. 103.103



Redemption of part of the Rev. R. Willis's plan, giving the Physick Garden, Kitchen Gardens, Cemetery, Orchard, also a list of Herbary and Print. Trees.

Close-up of Physick Garden conveniently located near Doctor's House and Infirmary.

Pisalis = calefactory, warming house to provide heat for cold monks who have been working outside or contemplating in the semi-open cloister!

Note prime location for 2 chapels in the infirmary, because at this time, healing by prayer was a major medical treatment. And there's blood-letting as well!

Monastery Physick Garden

Botanic Gardens in World History 9



Physick or Physic Gardens were created by a few private individuals and some institutions.

The herbs provided the source of most medicines used at that time. As early as 1250, a medical school was established at **MONTPELLIER** (in France) by Arab physicians and later became part of the University of Montpellier (f. 1289) and turned into a Botanic Garden in 1593. Such a garden was sometimes called a **HORTUS MEDICUS**.

Physick Garden / Hortus Medicus

[https://en.wikipedia.org/wiki/Jardin\\_des\\_plantes\\_de\\_Montpellier](https://en.wikipedia.org/wiki/Jardin_des_plantes_de_Montpellier) (2005 view)

Botanic Gardens in World History 10

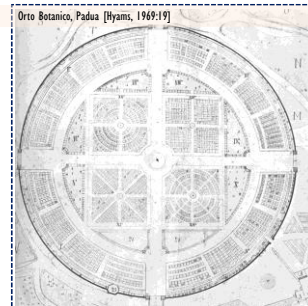
The modern era of botanic gardens began in Renaissance Italy as systematic collections of medicinal herbs used by student apothecaries (chemists) and medical physicians at the newly established universities. The earliest university **physick** (medical) garden or **hortus medicus** was at Pisa, soon followed by Padua (1543).<sup>6</sup> The first director of the Pisa Orto Botanico was **Luca Ghini** who is also credited with inventing that vital component of modern scientific botanical study, the **herbarium** (pl. herbaria). Ghini recognised the need to identify and compare plants all year around and from different places, so he dried and mounted specimens of leaves, flowers and fruit, with suitable naming labels, which he called a **hortus siccus** (collection of dried plants). Ghini's invention helped to establish a truly scientific botany, based on observation and experimentation rather than the Medieval and Renaissance custom of referring only to ancient Greek and Roman authorities, such as Theophrastus and Dioscorides. <sup>6</sup>Sources vary about the establishment dates; UNESCO says first was Padua in 1545 <http://whc.unesco.org/en/list/824>



Padua = Padova (oldest in same location)! Garden of Simples = Orto dei Semplici = Physick Garden or Hortus Medicus

RENAISSANCE and SCIENCE

Botanic Gardens in World History 11




University of Padua Orto Botanico. GoogleEarth images 2010 and 2015




Physick Garden

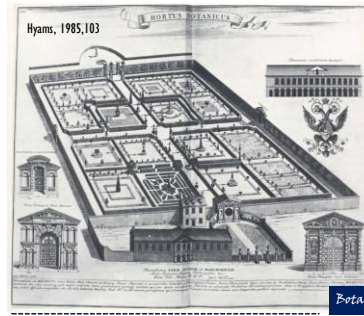
Botanic Gardens in World History 12




← Hortus Botanicus Leiden, The Netherlands in 1610 (est.1590) GoogleEarth image 2008



**Early Botanic Gardens**  
Botanic Gardens in World History 13

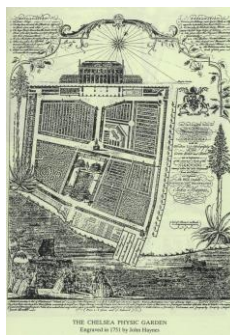


Hyams, 1985, 103




Oxford University Botanic Gardens, England est.1621 GoogleEarth 2009


**Early Botanic Gardens**  
Botanic Gardens in World History 14



Apothecaries Society Garden; Chelsea Physic Garden [1673] GoogleEarth 2009




**Early Botanic Gardens**  
Botanic Gardens in World History 15




[https://en.wikipedia.org/wiki/Garden\\_of\\_Eden](https://en.wikipedia.org/wiki/Garden_of_Eden)  
Jan Brueghel de Oude en Peter Paul Rubens "Het aard' paradijs" met de zondeval van Adam en Eva" 1615

**'Gardens of Eden'**



← The Peacable Kingdom by Quaker Edward Hicks c.1830-40 [https://en.wikipedia.org/wiki/Edward\\_Hicks](https://en.wikipedia.org/wiki/Edward_Hicks) The Garden of Eden by Rockliff Soverey c1906.




**THE GARDEN OF EDEN**  
The idea that botanic garden makers really wanted to re-create the Garden of Eden is just wrong. They did use the phrase loosely for its romantic imagery but the practical business of botanic gardens was largely scientific and not religious.

NB: Both these 2 artists cited by Prest focused on animals not plants!

**The Garden of Eden**  
Botanic Gardens in World History 17

The pattern of introducing new plant species into Europe has been recognized by several botanical historians, beginning with German botanist Gregor E.M. Kraus (1841-1915), who distinguished six main periods based on their geographical origins which was augmented by English botanist W.J. Stearn thus:

- European Period, to 1560
- Near East Period, 1560-1620
- Period of Canadian & Virginian herbaceous plants, 1620-86
- [African] Cape Period, 1687-1772
- Period of North American trees and shrubs, 1687-1772
- Period of Australian plants, 1772-1820
- Period of tropical glasshouse plants and hardy plants from Japan and North America, 1820-1900.
- Period of West Chinese plants, 1900-30.
- Period of hybrids, 1930 onwards.



**Plant Introductions to Europe**  
Botanic Gardens in World History 18



Anna Lewington  
**PLANTS FOR PEOPLE**  
"This book has been a complete inspiration to the Eden Project."

Vaughan & Geissler 1997, 145, 151, 35

'Anyone who is interested in plants **MUST** read this book.'  
Timothy Walker, Director of the University of Oxford Botanic Garden.  
'This book has been a complete inspiration to the Eden Project.' Tim Smit.

**3 Treasure Houses, of economic plants**  
*Botanic Gardens in World History 19*

The two centuries from 1700 to 1900 colonial economics drove the founding of many botanic gardens in the tropics worldwide. These gardens were set up by European governments or trading companies such as the (British) East India Company (which behaved as a ruling power until 1858, when the colonial government of India took control) and the French and Dutch East India companies. The garden served enlarging empires, particularly of Britain, France, Spain and the Netherlands, searching for economic and medical crops for their colonies to grow to support the home country industrially and economically... Initially colonial botanic gardens acted were little more than collections stations for tropical plants in the manner of *Jardins d'Acclimation*, but in the nineteenth century some, such as Singapore (1859) and Peradeniya (Sri Lanka, 1821) developed into important research centres... (Rutherford, 2015, 27)

**Exotic crops suitable for tropical BGs included spices, tea, coffee, breadfruit, hemp, rubber, chocolate, cotton and vanilla.**  
Most Australian BGs (except Brisbane and Darwin) are in **temperate climates** and tested suitable species (many favourites from home). Experimental plantings in subtropical **Brisbane Queensland** included trialling the native species (e.g. Macadamia & Bunya) PLUS the edible / ornamental well-known favourites from home and abroad (e.g. potatoes, carrots, tomatoes, corn, strawberries, pineapples, citrus, etc.).

**Colonial BOTANIC GARDENS**  
*Botanic Gardens in World History 20*

**Brockway** described the intricate relationships between colonial gardens and the success of the British Empire. National botanic gardens, particularly **Royal Botanic Gardens (RBG), Kew**, provided much of the trained personnel to establish and maintain these colonial gardens. Their scientific knowledge about plants was converted into "profit and power, for the Empire and for the industrial world system of which Britain was then the leader". **William Bean** (1908), the former Curator of RBG Kew wrote: "As soon as the *pax Britannica* is established, and often before, he [the 'Kew Man'] appears. He founds botanic stations where useful plants are grown for distribution, and gives demonstrations of the best methods of cultivating them."

Science and Colonial Expansion  
LUCHE H. BROCKWAY

Brockway, Luche H. (2007). *Science and Colonial Expansion: the Role of the British Royal Botanic Gardens*. New Haven/London: Yale University Press.

**19th Century COLONIALISM**  
*Botanic Gardens in World History 21*

FOOD & DRINK for humans & stock  
POISONS ! to humans & animals & plants  
DRUGS!  
HEALING/CLEANING PLANTS  
PERFUME-YIELDING  
WEARABLE MATERIALS (fibres & beads for weaving, twining, sewing)  
DYES for colouring fibres or paint  
FURNITURE & BUILDING MATERIALS  
OILS, WAXES, GUMS, RESINS, TANNINS  
SACRED and CEREMONIAL PLANTS etc.

**PLANT USES (economic botany)**  
*Botanic Gardens in World History 22*

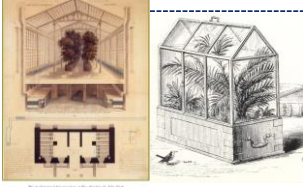
1840 National Botanic Gardens established at a Royal Garden, Kew at Richmond. Previously, Joseph Banks had begun a plant collection in 1770s & William Chambers added to garden designs and buildings. Now about 120 hectares.

**Royal Botanic Gardens, Kew (London)**  
*Botanic Gardens in World History 23*

**THE HOOKERS OF KEW!**  
"William Hooker (Director 1841-1865) is predominately known for his redevelopment of the physical structures of the Gardens, the building of the Palm House, the redesigning of the landscape and, perhaps most importantly, the founding of the Herbarium. The Herbarium was instrumental in securing Kew's place as a leading botanic garden. William Hooker's son, Joseph (Director 1865-1885), was the greater scientist but also developed the landscape with his restructuring of the National Arboretum, the laying out of new vistas and walks and the building of the Temperate House. Under considerable pressure, he also allowed more public access to the Gardens. But perhaps his most significant achievement was the redevelopment of the colonial links originally established by Sir Joseph Banks over forty years earlier. Under Joseph Hooker's directorship, the Gardens were responsible for developing the Malaysian and Indian rubber economies and the introduction of Liberian coffee to Sri Lanka. He also reinstated Kew's strong ties with the West Indies, which had declined under his father." (http://www.kew.org/heritage/timeline/1841-to-1865-hookers.html)

Decimus Burton's Main Entry gates (1845) now called the Elizabeth Gates  
1762 William Chamber's Pagoda

**Royal Botanic Garden, KEW**  
*Botanic Gardens in World History 24*



↑ The Glasshouse designed by John Nash (1800), renovated by Sir Jeffrey Wyattville (1836) for Royal Gardens Kew – note coal-fired boiler system to keep place warm in winter. [http://www.rbgkew.org/electronic\\_books/glasshouses/4-GLASSHOUSE1851-heating.pdf](http://www.rbgkew.org/electronic_books/glasshouses/4-GLASSHOUSE1851-heating.pdf)

Heated glasshouses enabled tender plants (those not frost hardy) from subtropical and tropical places to be grown for the wealthy. It also satisfied the Victorian's avaricious tendencies... they loved to make collections!

← "The Wardian case was an early type of sealed protective container for plants, an early version of the terrarium. It found great use in the 19<sup>th</sup> century in protecting foreign plants imported to Europe from overseas, the great majority of which had previously died from exposure during long sea journeys, frustrating the many scientific and amateur botanists of the time. The Wardian case was the direct forerunner of the modern terrarium (and the inspiration for the glass aquarium), and was invented by Dr. Nathaniel Bagshaw Ward (1791–1868), of London, in about 1829 after an accidental discovery inspired him." [https://en.wikipedia.org/wiki/Wardian\\_case](https://en.wikipedia.org/wiki/Wardian_case)

**Heated Glasshouses & Wardian Cases**  
*Botanic Gardens in World History 25*



"The Orangerie was designed by Sir William Chambers, and was completed in 1761. It measures 28 m x 10 m. It was found to be too dark for its intended purpose of growing citrus plants and they were moved out in 1841. After many changes of use, it is currently used as a restaurant." [https://en.wikipedia.org/wiki/Kew\\_Gardens](https://en.wikipedia.org/wiki/Kew_Gardens)

**RBG Kew: The Orangerie**  
*Botanic Gardens in World History 26*



"Heating was an important element of the glasshouse's design, as tropical palms need a warm, moist environment to thrive. Originally, basement boilers sent heat into the glasshouse via water pipes running beneath iron gratings in the floor. A tunnel ran between the Palm House and the Italianate Campanile smoke stack that stands beside Victoria Gate. This 150-metre-long (490 ft) passage served the dual purpose of carrying away sooty fumes to be released from the chimney and enabling coal to be brought to the boilers by underground railway. Today, the glasshouse is heated using gas and the tunnel houses the Palm House Keeper's office." <http://www.kew.org/visiting-palms/visit/visiting/palm-house-and-our-garden>

"The **Palm House** (1844–1848) was the result of cooperation between architect **Decimus Burton** and iron founder **Richard Turner**, and continues upon the glass house design principles developed by John Claudius Loudon and Joseph Paxton. A space frame of wrought iron arches, held together by horizontal tubular structures containing long prestressed cables, supports glass panes which were originally tinted green with copper oxide to reduce the significant heating effect. The 19m high central nave is surrounded by a walkway at 9m height, allowing visitors a closer look upon the palm tree crowns." [https://en.wikipedia.org/wiki/Kew\\_Gardens](https://en.wikipedia.org/wiki/Kew_Gardens)

**RBG, Kew: The Palm House**  
*Botanic Gardens in World History 27*



[https://en.wikipedia.org/wiki/Kew\\_Gardens](https://en.wikipedia.org/wiki/Kew_Gardens)

**RBG, Kew: The Palm House**  
*Botanic Gardens in World History 28*

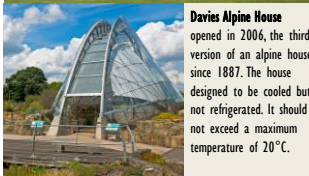


[https://en.wikipedia.org/wiki/Kew\\_Gardens](https://en.wikipedia.org/wiki/Kew_Gardens)

The Temperate House started 1860 finished 1898 was designed by **Decimus Burton**. It was the largest glasshouse in the world, and is still the largest Victorian one. Currently used for Australian plant collection.

See RBG Kew website <http://www.rbgkew.org.uk/places/kew/temperatouse.html>

**RBG, Kew: The Temperate House**  
*Botanic Gardens in World History 29*



"Princess of Wales Conservatory, designed by architect Gordon Wilson, was opened in **1987** by Diana, Princess of Wales in commemoration of her predecessor Augusta's associations with Kew. In 1989 the conservatory received the Europa Nostra award for conservation. The conservatory houses ten computer-controlled micro-climatic zones, with the bulk of the greenhouse volume composed of Dry Tropics and Wet Tropics plants. Significant numbers of orchids, water lilies, cacti, lithops, carnivorous plants and bromeliads are housed in the various zones. The cactus collection also extends outside the conservatory where some hardier species can be found."

**RBG, Kew: other glasshouses**  
*Botanic Gardens in World History 30*



"Herbarium specimens are dried and pressed plants stuck on a sheet of cartridge or other archival quality paper with a label attached in the bottom right-hand corner to indicate provenance, collector, number and identity. Additional information, such as local uses, is often included in the label information."

<http://www.kew.org/science-conservation/collections/herbarium>  
great 9 minute video on this page!

**RBG, KEW, HERBARIUM**

*Botanic Gardens in World History 31*



**Rock Garden** established in 1882 by Thistleton Dyer (Director) as a collection of **Alpine plants** in constructed rockwork. Reconstructed several times since.  
<http://www.kew.org/visit-kew-gardens/explore/attractions/rock-garden>

**RBG KEW: Rock Garden near the Pinetum**

*Botanic Gardens in World History 32*

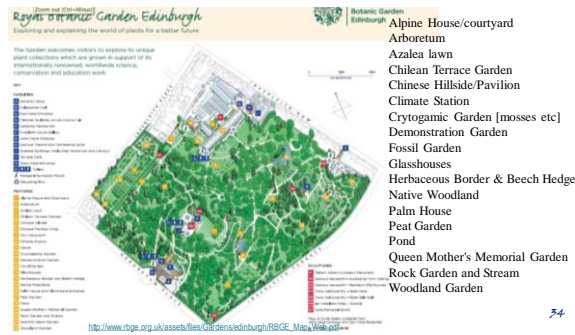


"The Royal Botanic Garden Edinburgh (RBGE) was founded in the 17th century as a physic garden. Now it extends over four Gardens boasting a rich living collection of plants, and is a world-renowned centre for plant science and education."  
<http://www.rbge.org.uk/about-us/home>

Began on another site in 1670, the present Inverleith site was settled in 1820s. William McNab was Principle Gardener for the move and his son James McNab succeeded him, designing the first Rock Garden in 1871. It was reconstructed by Regius Keeper Isaac Ballour in 1908.  
<http://www.rbge.org.uk/rbge/web/swd/timeline.jsp>

**RBG, EDINBURGH: McNab's Rock Garden**

*Botanic Gardens in World History 33*



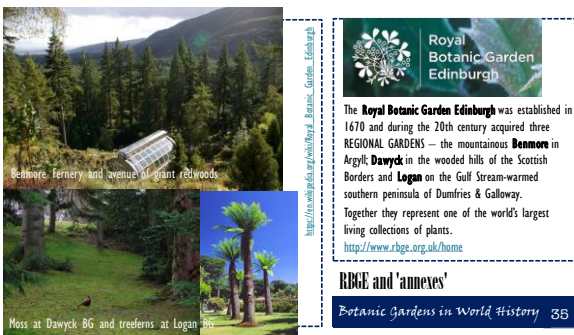
**Royal Botanic Garden Edinburgh**  
Exploring and expanding the world of plants for a better future

The Garden welcomes visitors to explore its unique plant collections which are grown in support of its internationally renowned, world-class scientific, conservation and education work.

- Alpine House/courtyard
- Arboretum
- Azalea lawn
- Chilean Terrace Garden
- Chinese Hillside/Pavilion
- Climate Station
- Crytogenic Garden [mosses etc]
- Demonstration Garden
- Fossil Garden
- Glasshouses
- Herbaceous Border & Beech Hedge
- Native Woodland
- Palm House
- Peat Garden
- Pond
- Queen Mother's Memorial Garden
- Rock Garden and Stream
- Woodland Garden

[http://www.rbge.org.uk/assets/files/documents/edinburghRBGE\\_Map\\_Web.pdf](http://www.rbge.org.uk/assets/files/documents/edinburghRBGE_Map_Web.pdf)

*Botanic Gardens in World History 34*

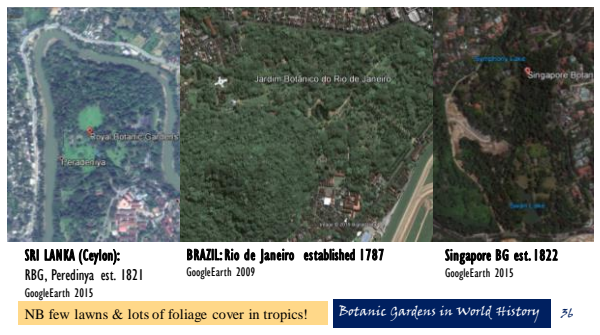


**Royal Botanic Garden Edinburgh**

The **Royal Botanic Garden Edinburgh** was established in 1670 and during the 20th century acquired three **REGIONAL GARDENS** — the mountainous **Benmore** in Argyll; **Dawyck** in the wooded hills of the Scottish Borders and **Logan** on the Gulf Stream-warmed southern peninsula of Dumfries & Galloway. Together they represent one of the world's largest living collections of plants.  
<http://www.rbge.org.uk/home>

**RBGE and 'annexes'**

*Botanic Gardens in World History 35*



**SRI LANKA (Ceylon):**  
RBG, Peredinya est. 1821  
GoogleEarth 2015

**BRAZIL: Nio de Janeiro** established 1787  
GoogleEarth 2009

**Singapore BG est. 1822**  
GoogleEarth 2015

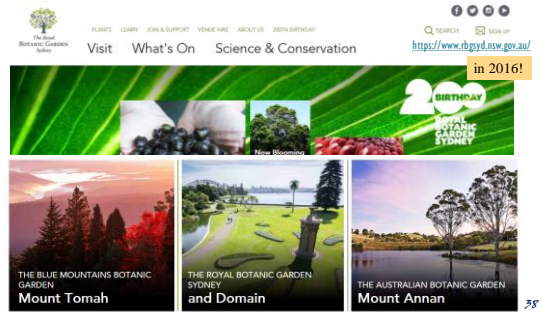
NB few lawns & lots of foliage cover in tropics!

*Botanic Gardens in World History 36*

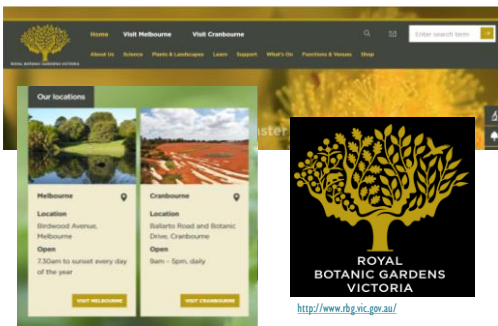




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Jardí Botànic de Barcelona (1999)

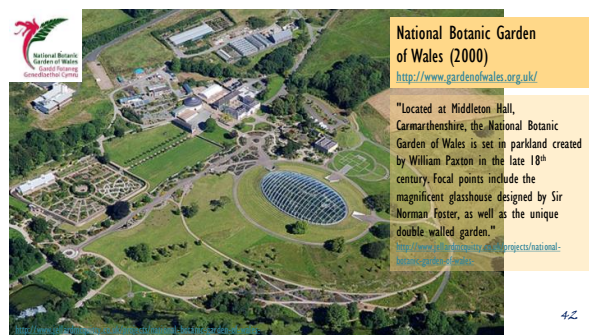
Displays World's Five Mediterranean regions and universal accessibility on a very hilly site. "Barcelona's new Botanical Garden was designed by an interdisciplinary team comprising the architects Carlos Ferrater and Josep Lluís Canosa, the landscape architect Bet Figueras, the horticulturalist Artur Bossy and the biologist Joan Pedrola." <http://www.landscape.com/index.php/2013/08/jbb-jardi-botanic-barcelona/>

Botanic Gardens in World History 40



Jardí Botànic de Barcelona (1999)

41



National Botanic Garden of Wales (2000)

<http://www.gardenofwales.org.uk/>

"Located at Middleton Hall, Carmarthenshire, the National Botanic Garden of Wales is set in parkland created by William Paxton in the late 18th century. Focal points include the magnificent glasshouse designed by Sir Norman Foster, as well as the unique double walled garden." <http://www.gardenofwales.org.uk/projects/national-botanic-garden/>

42



<https://www.bgci.org/files/Publications/StrategicPlan2014.pdf> 2014

03 'Arks', conserving species Botanic Gardens in World History 43

BGCI was established in 1987 as a small secretariat under the auspices of the **International Union for the Conservation of Nature (IUCN)**. It has become a separate charitable company with allied branches in USA and China.

**Our Vision:**  
A world in which plant diversity is valued by all, its source and development is supported in life.

**Our Mission:**  
To sustain botanical gardens and register members in securing plant diversity for the well-being of present and the future.

Botanic Gardens Conservation International is the world authority on botanic gardens and plant conservation and the only global organisation devoted to conserving the world's plant diversity.

**Botanic Gardens Conservation International**  
BGCI provides a global voice for all botanic gardens, championing and celebrating their inspiring work. We are the world's largest plant conservation network, open to all, join us in helping to save the world's threatened plants. <https://www.bgci.org/>  
BGCI supports the development and implementation of the **Global Strategy for Plant Conservation (GSPC)** at a global, regional, national and local level. We work directly with our members and other plant conservation organisations, carrying out threat assessments, seed conservation, ecological restoration and plant health projects around the world.

**CONSERVING Rare & Endangered**  
Botanic Gardens in World History 44

**Looking to the Future**

The biodiversity of the planet is declining. Too many wild plant species are threatened with extinction and current efforts to protect them are inadequate. More than half of humanity now lives in urban areas, leading to a growing disconnection from nature and decreasing health and well-being. BGCI is committed to tackling these issues and to scaling up its efforts. Responding to international biodiversity policy, BGCI will continue to focus on securing a future for threatened plant species and their habitats whilst engaging with wider audiences and strengthening the contribution of botanic gardens to ecological restoration.

**BGCI has three main objectives:**

- Sustaining plants and wild places.
- Connecting people with nature.
- Finding nature solutions for sustainable livelihoods and human well-being.

Our strategy for the next 5 years sets out the key actions we will take towards these objectives and we will monitor our progress against clearly defined targets.

SEE ALSO: [https://www.bgci.org/plant-conservation/why\\_conserve/](https://www.bgci.org/plant-conservation/why_conserve/)

<https://www.bgci.org/files/Publications/StrategicPlan2014.pdf> 2014

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RBG, KEW <http://www.antiquaprintgallery.com/royal-botanic-gardens-kew-vintage-map-plan-london-1927-217171-p.asp>

**Arranging plants...**

Botanic Gardens in World History 46

**SYSTEMATIC ARRANGEMENTS** are either 'artificial' or 'natural'.

Not the same as contemporary naturalistic planting!

'Artificial' arrangements include:

- (1) morphological
- (2) split arrangement
- (3) geographical
- (4) plant physiology
- (5) ecological
- (6) useful plants
- (7) fossil plants
- (8) chronological
- (9) themed collections
- (10) other arrangements
- (11) Linnaean "Sexual System". (Sim 1990, 71-84)

Attempts at 'Natural' arrangements include:

- (1) Jussieuian System
- (2) Bentham and Hooker
- (3) Engler
- (4) Takhtajan
- (5) Cronquist
- (all TAXONOMIC ARRANGEMENTS)

While landscape design history reveals many design approaches (or styles), botanic gardens are mostly concerned with scientific matters and have used other ways to arrange their living plant collections.

Some BGs have **SYSTEM GARDENS** or **ORDER** or **FAMILY BEDS** (arranged according to whatever taxonomic system is in current use!)  
Linnaeus may have given us the useful **BINOMIAL NAMING SYSTEM**, but his taxonomic system has not been used for centuries.

**ARRANGEMENTS of COLLECTIONS**  
Botanic Gardens in World History 47

- (1) **morphological**  
areas set aside for specific forms and properties of plants; e.g. The *Catalogus Plantarum Horti Pisani* (1723) by M.A. Tili, describes different beds or enclosures for poisonous plants, prickly plants, smelling plants, bulbous plants etc. at the Pisa Botanic Garden (Hill 1915 pg.192-193).
- (2) **split arrangement (2 divisions)**  
Herbaceous collection & woody plants in an Arboretum, e.g. around 1760, at the Royal Garden at Kew, Smith (1800) quoted in Hill 1915 pg.206)
- (3) **geographical**  
plants grouped together from the country or continent of origin, but not necessarily as a naturally occurring ecosystem; e.g. American gardens, the Australian House at Kew, and Oxford University Botanic Garden in the early nineteenth century.

**Arrangements of Plant Collections**  
Botanic Gardens in World History 48



**[4] plant physiology**  
 "Plant physiology affords another basis for plant arrangement and perhaps is fruitful of greater educational value than almost any other system." [Hill, 1915, pg.220]  
 Functional characteristics...still unsure what he means!

**[6] ecological**  
 plants arranged simulating an ecosystem as near as possible, e.g. bog garden, temperate rock gardens (=Alpine gardens) and dry-tropical rock gardens, various sorts of rainforest, etc.

**[6] useful plants**  
 areas set aside to display various plants of economic value, or medicinal value, or food value, e.g. medicinal gardens, herb gardens, agricultural crops etc.



Arrangements of Plant Collections

Botanic Gardens in World History 49

**[7] fossil plants**  
 plants found as fossils in various rock-strata can be placed amongst a rock garden or plants from early evolutionary orders e.g. ginkos, ferns and conifers

**[8] chronological borders**  
 plants arranged according to their date of introduction into a particular country, e.g. "exotic plants history bed" at Harlow Car Gardens, Yorkshire; 'chronological border' at Birmingham Botanic Garden

**[9] themed collections**  
 collections of plants of a single taxon, like a family or order, e.g. **Pinetum** - a group of coniferous plants, **Palmetum** - a group of palms or palm allies; **Succulentarium** - a group of fleshy or juicy plants



Arrangements of Plant Collections

Botanic Gardens in World History 50

**[10] other arrangements**  
 (a) combination of pattern and systematic arrangement was recommended by C.H. Smith, who's method has been described as "...arranging an arboretum in the shape of a star, in order to convey the arrangement of families in Lindley's system of classification [another attempt at a natural system]" [Elliott 1986 pg.118].  
 (b) various arrangements of plants are listed in an extract from "Arrangements of Vegetable Tissues and Organs, Analysis of Natural Orders, and other Tables, for the use of students of Botany", author unknown, found in an unrelated archive file at RBG Edinburgh Library. Each of these lists may have been used as the basis for the arrangement of botanical collections, but research to date cannot confirm this. The lists are:

- Botanical Stations (based on climate/habitat);
- Schouw's Phyto-Geographic Regions (geographical origin);
- Zones of Vegetation (of plants from mountains).



Arrangements of Plant Collections

Botanic Gardens in World History 51

**[11] Linnaean System of Classification**  
 "According to the Linnaean system all plants are furnished with flowers, either conspicuous or inconspicuous. The plants with conspicuous flowers are arranged according to the number and position of their stamens and pistils; those with inconspicuous flowers are arranged according to the situation of the flowers on the plant, or according to other circumstances in the plant itself." [Loudon 1832 pg.xviii]  
 The Sexual System of Linnaeus was in use between 1737 and 1830, and that "it marked a great advance, as it provided for the first time a practical way of naming all the plants then known. For this reason it was widely adopted within a very short period" [Jeffrey 1986 pg.119].  
 For instance, if this system was applied, the following three species would be placed together under one order and class:  
 "Class XXI. Order 10. MONOECIA MONADELPHIA...  
*Callitris cupressiformis* [*Callitris rhomboidea*, the Port Jackson Pine]; *Croton rosmarinifolia* [*Codiaeum* sp.]; and, *Sterculia lanceolata* [*Brachychiton* sp.]" [Loudon 1832 pg.490].

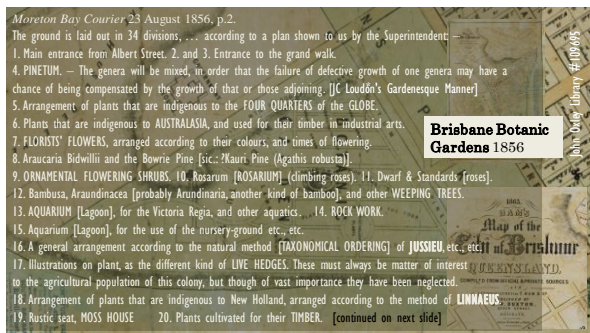
**Jussieu System of Classification**  
 J.C. Loudon recommended the use of the Jussieu classification "...for the arrangement of botanical or scientific flower gardens", as early as 1828, in the "Gardener's Magazine" [Vol.1 pg.436]. The use of this natural system, he further recommends is best for large collections of plants, whereas, for the beginner botanist, he says the Linnaean artificial system will benefit the learner most [pg.435].

Arrangements of Plant Collections

Botanic Gardens in World History 52



Brisbane Botanic Gardens, established 1855, plan of 1863



Brisbane Botanic Gardens 1856

Moreton Bay Courier 23 August 1856, p.2.  
 The ground is laid out in 34 divisions, ... according to a plan shown to us by the Superintendent:  
 1. Main entrance from Albert Street. 2. and 3. Entrance to the grand walk.  
 4. PINETUM. — The genera will be mixed, in order that the failure of defective growth of one genera may have a chance of being compensated by the growth of that or those adjoining. [J.C Loudon's Gardeneresque Manner]  
 5. Arrangement of plants that are indigenous to the FOUR QUARTERS of the GLOBE.  
 6. Plants that are indigenous to AUSTRALASIA, and used for their timber in industrial arts.  
 7. FLORESTIS' FLOWERS, arranged according to their colours, and times of flowering.  
 8. Araucaria Bidwillii and the Bowie Pine [sic: Kauri Pine (*Agathis robusta*)].  
 9. ORNAMENTAL FLOWERING SHRUBS. 10. Rosarium [*ROSARIUM*] (climbing roses). 11. Dwarf & Standards [roses].  
 12. Bambusa, Arundinacea [probably Arundinaria, another kind of bamboo], and other WEEPING TREES.  
 13. AQUARIUM [Lagoon], for the Victoria Regia, and other aquatics. 14. ROCK WORK.  
 15. Aquarium [Lagoon], for the use of the nursery-ground etc., etc.  
 16. A general arrangement according to the natural method (TAXONOMICAL ORDERING) of JUSSIEU, etc., etc. in the agricultural population of this colony, but though of vast importance they have been neglected.  
 17. Illustrations on plant, as the different kind of LIVE HEDGES. These must always be matter of interest to the agricultural population of this colony, but though of vast importance they have been neglected.  
 18. Arrangement of plants that are indigenous to New Holland, arranged according to the method of LINNAEUS.  
 19. Rustic seat, MOSS HOUSE 20. Plants cultivated for their TIMBER. [continued on next slide]

*Moreton Bay Courier* 23 August 1856, p.2.

21. Plants cultivated for their HERBAGE and FORAGE. 22. Plants cultivated for their SEEDS and STRAW.

23. Plants cultivated for their MEDICINAL PROPERTIES. 24. Plants cultivated for their utility in ARTS and MANUFACTURES.

25. Plants cultivated for their FRUITS as an article of the desert. 26. Plants cultivated chiefly for their ROOTS.

27. Plants cultivated for their AROMATIC SUBSTANCES.


28. MUSEUM OF ECONOMIC BOTANY, for the deposit of those vegetable products that are eminently curious or in anywise serviceable to mankind; it is consequently of the highest importance, if simply for instructional purposes, and essential to a young commercial colony, as must be evident to any person who reflects on the innumerable wants of the human race. The ship-builder, the carpenter, the cabinet-maker, the general merchant, the manufacturer, the weaver, the physician, the druggist, the dyer, the oil and colourman, etc., etc., would find the several objects in which they are from, and the names of the plants from which they are procured.

29. PLEASURE GROUND. The trees forming the arboretum will be planted at stated distances in a fixed order, along the walks of the pleasure ground. The clumps necessary for breaking the lines and fulfilling the general plan of the garden, will be made up of a selection of really ornamental trees, quite independent of the scientific collections.

30. Reserve ground as a NURSERY for plants. 31. Enclosure for dwelling houses and other offices.

32. Grass lawn for horticultural flower shows. 33. Bank near the river – grass.

34. LABYRINTH.




Botanischer Garten und Botanisches Museum Berlin - Dahlem

Established 1679 as an Agricultural model garden. Herbarium and records destroyed in WW2.

Nowadays a complex arrangement of different compartments of living collections and operational facilities, including:

- (MU) museum (SW) Marsh (Bog) and Water Garden
- (MG) Moss Garden (DT) Fragrance & Touch Garden
- (AZ) Medicinal Plant Garden (SY) System (herbaceous) garden
- (GW) glasshouses (IG) Italian Garden (PG) Geography Plants (AR) Arboretum



Take a breath as we tabulate the findings...  
**3 SUMMARY...**

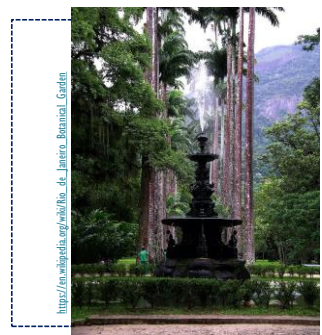
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HISTORICAL (Major European Landscape Design Styles)	PLANT COLLECTIONS for STATE or PRIVATE INSTITUTIONS e.g. Monastery, University, Society of Apothecaries or Government Organisations	PLANT COLLECTIONS for PRIVATE INDIVIDUALS or GROUPS for their own amusement, profit or education
5th to 15th CENTURIES: (Medieval Gardens)	HERBULARIIS	HERB GARDEN or HERBARIUM (LATIN) or HERBER (ENGLISH)
16th to 17th CENTURIES: (Renaissance Gardens)	HORTUS MEDICUS or PHYSIC (or PHYSICK) GARDEN HORTUS SICCUS or HERBARIUM	Private PHYSIC GARDEN
18th CENTURY: (Baroque & Formal Styles; English Landscape School; Picturesque)	BOTANIC GARDENS ARBORETA (sing. ARBORETUM)	Private BOTANIC GARDENS / ARBORETA Private HERBARIA; AMERICAN GARDENS
19th CENTURY: (Picturesque; Gardenesque; Public Urban Parks; Formal Styles; Massed Bedding; Arts/Crafts Style)	NATIONAL BOTANIC GARDENS COLONIAL Acclimatization Gardens and/or Botanic Gardens ROCK OR ALPINE GARDEN Compartments ROSE GARDEN Compartment SHRUBBERIES (Compartment)	Private SOCIETIES' BOTANIC GARDENS PUBLIC URBAN PARKS Private PLANT COLLECTIONS ROCK OR ALPINE GARDEN Compartments ROSE GARDEN Compartment; SHRUBBERIES
20th CENTURY: (Arts/Crafts Style; American Country House Era; Modernism; Ecological Design; Postmodernism or Avant-Garde Approaches)	BOTANIC GARDENS OF PRIVATE SOCIETIES GARDENS OF HORTICULTURAL SOCIETIES OUTSTATIONS OR ANNEXES to Existing Botanic Gardens NEW SPECIALISED BOTANIC GARDENS NATIONAL PLANT COLLECTIONS INTERNATIONAL NETWORKS OF BOTANIC GARDENS	NATIONAL TRUST GARDENS (in UK)

**Historic Development**  
 \*(and not usually for scientific purposes)

When?	Establishment
1543	University of Pisa, Italy
1543	University of Padua, Italy
1580	University of Leipzig, Austria
1587	University of Leyden, Netherlands
1593	University of Heidelberg, Germany
1594	University of Montpellier, France
1621	Oxford University, England
1635	Jardin des Plantes, Paris, France
1665	University of Uppsala, Sweden
1670	Royal Botanic Garden, Edinburgh, Scot.
1673	Chelsea Physic Garden, London
1682	National Botanic Garden, Dublin, Ireland
1751	Royal Botanic Garden, Kew, England
1762	Cambridge University, England
1786	Indian Botanic Garden, Calcutta, India
1787	Jardim Botânico, Rio de Janeiro, Brazil
1800	Longwood Gardens, Pennsylvania, USA
1816	RBG, Sydney, Australia
1817	Kebun Raya, Bogor, Indonesia
1821	Peradeniya, Sri Lanka (former Ceylon)
1822	Singapore Botanic Gardens
1829	Westonbirt Arboretum, England
1845	RBG, Melbourne, Australia
1851	Missouri Botanical Garden, St. Louis, USA
1855	Brisbane Botanic Gardens, Queensland
1872	Arnold Arboretum, Boston, USA
1904	Royal Horticultural Society's Garden, Wisley, UK
1906	Huntington Botanic Gardens, Los Angeles, California, USA
1910	Brooklyn Botanic Garden, New York, USA
1911	Kirstenbosch, South Africa
1925	Sherwood Forest Park/Arboretum
1935	Fairchild Tropical Garden, Florida, USA
1970/76	Brisbane BG, Mt. Coot-tha

**Some BOTANIC GARDENS ESTABLISHMENT DATES**



**Changes to BGs in late 20th century include:**

Compromise (less science; more recreation)

**PLANT CONSERVATION**  
 global cooperation supports biodiversity

**COMMUNITY ENGAGEMENT**  
 including education/visitor centres, shops, volunteers & 'Friends' groups

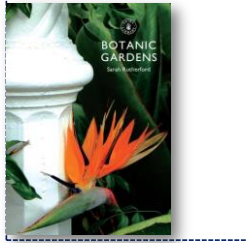
**BUT** horticultural science, taxonomy, ethnobotany, economic botany, and more, continues!

**SUMMARY**  
 Botanic Gardens in World History 60



**LAST WORD:**

"The Combined cultivation and curation of living plant specimens, and the collection and curation of preserved specimens, are the key work of a botanic garden. Together the living and preserved specimens form an essential reference collection for scientific study set within an ornamental garden usually containing various buildings to support this work."  
[Rutherford 2015]



**What makes a BOTANIC GARDEN?**  
*Botanic Gardens in World History* 61

- ENGLISH: Botanic Garden or Botanical Garden (esp. USA)
- LATIN: *Hortus Medicus* = physic garden
- LATIN: *Hortus Botanicus* = botanic garden
- LATIN: *Hortus Siccus* = Herbarium (collection of dried plants)
- ITALIAN: *Orto Botanico*
- FRENCH: *Jardin Botanique* *Jardin des Plantes* [Paris]
- PORTUGUESE: *Jardim Botânico* *Jardim Botânico do Rio de Janeiro*
- GERMAN: *Botanischer Garten* *Botanisches Museum Berlin-Dahlem*
- SPAIN: *Jardí Botànic* (Catalan) *Real Jardín Botánico de Madrid*

Finally, a list of wonderful words to use & enjoy!

The end.  
References follow.

**BOTANIC GARDENS translated!**

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Continued ...

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