

BOTANIC GARDENS IN SRI LANKA

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INTRODUCTION

Man's interest in plants is as old as the great civilizations of the world. Throughout recorded history, man has established for his own benefit and for his emotional development living collections of plants in some form or another. In their broadest concept, these gardens may be considered as the botanic gardens of their time. The botanic garden has gradually evolved from the gardens of medicinal plants which were known as 'Physic Gardens' that flourished in the 16th and 17th centuries. These medicinal gardens were established either to test the efficacy of drug plants by physicians in universities or as sources of medicinal material for practitioners. The earliest university botanic garden established for the study of herbal medicine was that established in Pisa in 1543. These were followed by gardens in Padua (1545), Leyden (1587), Heidelberg (1593), Oxford (1621) and Paris (1635). The renowned Chelsea Physic Garden in London was established in 1673.

In the 18th and 19th centuries, the botanic gardens in Europe were closely associated with territorial exploration and colonial expansion. Botanic gardens in colonial countries enjoyed great activity and their principal role was to catalogue plants, evaluate their usefulness at home and to determine their importance in the economy of the colonies. Some members of the staff of these botanic gardens became plant collectors and plant explorers and their collections were deposited in the botanic gardens and herbaria as living specimens or herbarium vouchers. Along with these collections, libraries were also developed filled with descriptions of plants new to science.

Sri Lanka became known to the west because of her spices and this attracted the Portuguese to the island. Her maritime provinces came under their domination from 1505 to 1640. The Dutch replaced the Portuguese and ruled the island from 1640 to 1796. In the late 18th century England made a treaty of alliance with the Kandyan Kingdom of Sri Lanka and captured the Maritime Provinces. Finally, the entire island came under British administration in 1815 after the signing of the Kandyan Convention. As a result of these successive colonial invasions, the unique flora of Sri Lanka became known to the European botanists in the early history of botany. Paul Hermann, Chief Medical Officer of the Dutch East India Company who later became the Professor of Botany at Leyden, collected Sri Lanka plants from 1672 to 1676

and his herbarium came into the hands of Linnaeus in 1745. Linnaeus published an account of them under the title 'Flora Zeylanica' in 1747. In that work, the plants are arranged according to the system of classification proposed by himself and thus Sri Lanka has the unique honour of possessing one of the earliest floras based on the Linnaean system and written by Linnaeus himself. The Dutch maintained an interest in Sri Lanka botany throughout their occupation. Well-known botanists like C.P. Thunberg, afterwards Professor of Botany at Uppsala University, collected Sri Lanka plants from 1777 to 1778. In the 18th century, plants of Sri Lanka and the peculiarities of her flora were widely known and this may have been the contributory factor which urged the British Government to order the establishment of the Royal Botanic Gardens in Sri Lanka.

EARLY BEGINNINGS

The first botanic garden in Sri Lanka was established by the Dutch but after the English conquest it was neglected and the land sold by the Government. In 1810, Sir Joseph Banks, then President of the Royal Society, advised the Colonial Government to open the first English Botanic Garden in Sri Lanka and accordingly a seven-acre garden was established under the name 'Kew' in Kew Road, Slave Island, Colombo with William Kerr as the first Superintendent in 1812. In 1815, the garden was moved to Kalutara where it was established in an abandoned sugarcane plantation of 600 acres at Uggalboda. In the following year Kerr died and was succeeded in 1817 by Alexander Moon who contributed much to the improvement of the Kalutara garden. In 1821 the Colonial Government instructed Alexander Moon to select a suitable site near Kandy for a botanical garden. Having explored the region around Kandy, Moon reported to the Government that the 'site of the late Kandyan King's Garden at Peradeniya is better adapted for the proposed Botanical Establishment.....' It is recorded that at the time of acquisition of the site for the proposed garden, the land contained 800 coconut palms, 244 jak trees, 13 del trees, 33 kitul palms, 744 coffee plants, 77 pepper vines and 178 areca palms besides some other fruit trees.

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The available evidence indicates that the Botanic Gardens at Peradeniya were instituted in February 1822. The site is about 60 ha in extent and it was one of the Royal Gardens of the Kandyan Kings. In 1371 King Wickrema Bahu III kept court in this site. From 1747 — 1780 King Kirti Sri Raja Sinha used it as a Royal Garden, and from 1780 — 1798 King Rajadhi Rajasinghe resided therein. A Vihara and Dagaba were built at this site by King Wimala Dharma but they were destroyed by the British in 1815.

Alexander Moon was the first Superintendent of the Botanic Gardens at Peradeniya. The transfer of exotics from the Kalutara garden was made

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by successive Superintendents up to 1843. In addition to his pioneering work on the establishment of the Gardens, Moon published his 'Catalogue of the Indigenous and Exotic Plants growing in Ceylon' in the year 1824. The scientific era of the Peradeniya Gardens may be said to have commenced with the appointment in 1844 of George Gardner who effected many important improvements to the Gardens, but his chief work was the exploration of the island and the collection and description of her flora. However, he was not destined to complete it for he died in 1849 at the early age of 37.

The Botanic Gardens at Peradeniya became well known throughout the world very early in their history mainly because of their botanic and economic content. In this respect, Sri Lanka is much indebted to the services of three Directors of Botanic Gardens, George Gardner (1844-1849), G. H. K. Thwaites (1849-1880). and Henry Trimen (1880-1896) whose combined efforts extending over a period of 52 years in systematic botany and plant introduction brought much fame to this institution culminating in the publication by Trimen of his monumental work 'The Handbook to the Flora of Ceylon' in 1895. Trimen published the first three volumes and the last two volumes were published from Trimen's notes by Sir J. D. Hooker after Trimen's death. In 1864 Thwaites published a catalogue of Sri Lanka plants entitled 'Enumeratio Plantarum Zeylaniae'. He made numerous collecting tours and discovered many new plants. Thwaites prepared numbered series of Sri Lanka plants (known as CP), sets of which were distributed to the principal herbaria in Europe, retaining a set for the National Herbarium at Peradeniya.

ECONOMIC PLANTS

It was also from 1850 to 1890 that the introduction and acclimatization of plants were carried out with much vigour and with many successes. Among the plants then introduced may be mentioned rubber, cacao, cinchona, vanilla, fruits, vegetables, flowers, many shade and timber trees; while the spread in the cultivation of tea and spices like clove and nutmeg was also been largely helped by the introduction of improved varieties through the Botanic Gardens.

Coffee was probably introduced into Sri Lanka from Indonesia by the Dutch and in 1845 Peradeniya supplied seedlings of the Arabica variety to estates. Liberian coffee was also introduced in 1873 from Jamaica. Towards the end of Thwaites's career in the Botanic Gardens coffee estates were ravaged by the deadly coffee leaf disease, *Hemileia vastatrix*, and the Colonial Government commissioned the services of Harry Marshall Ward, a mycologist of great renown in England, to study the disease. However, all efforts made to control the disease were unsuccessful and the coffee industry in the island collapsed completely.

The establishment of the Hakgala Gardens in 1861 marks the introduction of cinchona to the island. Seeds of *C. succirubra* and *C. calisaya* were obtained and the site of the present Hakgala Gardens was selected as a nursery for an experimental trial of cinchona. In the year 1876 a total of 1,224,000 plants was distributed and cinchona became a lucrative industry. This was entirely a creation of the Botanic Gardens from supplies of seeds and plants obtained as a result of Markham's mission to Peru. This industry became unremunerative with keen competition from India and Indonesia and it ultimately gave place to tea.

Tea was introduced to Sri Lanka prior to the year 1828 and was grown at the Kalutara garden. In 1839, Wallich sent seeds of the then newly discovered Assam tea to the Peradeniya Gardens and the Assam Hybrid variety was distributed from Hakgala Gardens in 1870 from planting material obtained in 1867. The first tea made in Sri Lanka for sale was in 1872 on Loolecondara Estate, the planting material for which was obtained from Peradeniya in 1866.

The entire rubber industry in South East Asia owes its existence to seeds or stocks from the Botanic Gardens of Sri Lanka. Wickham was commissioned by Kew Gardens in England to obtain seeds of para rubber (*Hevea brasiliensis*). He collected 70,000 seeds from the Tapaio plateau in Brazil and they were brought to Kew. There 7,000 seedlings were raised from these seeds of which 1919 plants were dispatched to Sri Lanka in 1876. In 1876, the present site of the Heneratgoda (Gampaha) Gardens was selected to put out these plants. Planting material raised from the original stock was distributed for planting in estates in Sri Lanka as well as other countries in South East Asia.

Another industry which owes its existence in Sri Lanka to the Botanic Gardens is the cacao industry. The cacao plant is not mentioned in the literature prior to the publication of Moon's catalogue. Plants had been introduced as early as 1834 from Trinidad, and Thwaites encouraged the cultivation of cacao in 1880 with the introduction of a consignment of highly prized varieties from Trinidad. Seeds from these varieties were distributed for cultivation in the island.

Other crops introduced through the Botanic Gardens were camphor in 1852, nutmeg reintroduced in 1804, vanilla in 1853 and a large number of valuable trees such as mahogany in 1888, the sandalwood in 1869, *Albizia moluccana* in 1880 and dadap (*Erythrina Lithosperma*) in 1852. Several fruit plants such as the Durian from Malaysia in about 1850, the tomato in 1814 and the Cherimoya in 1882 were introduced by the Gardens.

During Trimen's directorship and afterwards distinguished botanists like Professor F. O. Bower, K. Goebel and G. Haberlandt visited the island and in order to provide working accommodation for these botanists a botanical laboratory was established at Peradeniya in 1900. Trimen was succeeded

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by J. C. Willis as the Director of the Peradeniya Gardens in 1896. He thoroughly investigated the Podostemaceae of India and Sri Lanka and later studied problems dealing with the distribution of species and evolution which found expression in publications such as the 'Flora of Ritigala, a Study in Endemism'. These studies enabled him to enunciate the 'Age and Area' theory in later years. In this period, several botanists visited Peradeniya and made botanical investigations taking advantage of the facilities provided at the laboratory. In 1898 Willis secured the establishment of a post of Scientific Assistant and the first occupant of that post was J. Parkin who with Pearson investigated the botany of the *patana* grasslands of Sri Lanka.

While the work at Peradeniya Gardens in the early years was mainly directed towards botany and acclimatization of useful plants, activities in later years developed towards agriculture and economic botany which led eventually to the institution of the Department of Agriculture in 1912 after the retirement of Willis in 1911. After the establishment of the Department of Agriculture Petch assumed responsibility for systematic botany in 1913 and H. F. Macmillan became the Superintendent of Botanic Gardens in 1912. Apart from his contributions to systematic botany, Petch worked on the fungi of Sri Lanka. With the establishment of the Department of Agriculture, the Botanic Gardens became one of its Divisions and the number of plant introductions began to diminish. These later introductions include a host of purely horticultural subjects and plants of minor economic significance, Introduction of economic plants became a function of the Department of Agriculture and the research institutions established for the development of the various plantation crops.

ORNAMENTAL HORTICULTURE

Thus, activities after 1912 in the Botanic Gardens have been mainly confined to the development of ornamental horticulture in the island. During the first half of the present century new introductions and improvements were made on such plants as Hibiscus, Canna, Croton, Ixora and Bougainvillea, while the years after 1950 were mainly devoted to the hybridization of anthuriums and orchids. In 1971 the Botanic Gardens undertook a research and development project on the breeding and production of anthurium and orchid plants for an export oriented cut-flower industry. A large number of suitable hybrids are being developed and distributed to cut-flower growers in the island through this project. The Orchid Display House offers the visitor a captivating display of exotic blooms.

MEDICINAL PLANTS

From the early nineteen fifties the Botanic Gardens has also taken a keen interest in the cultivation of plants used in indigenous medicine. Apart from the small medicinal plant collection at the Peradeniya Gardens, a

medicinal garden was established at Ganewatte in the Intermediate Zone in 1950. This station now contains well over 5000 well established medicinal plants while trials are also being conducted on the cultivation of short-term drug plants such as *Catharanthus roseus* (Vinca), *Rauvolfia serpentina*, *Piper longum* and *Solanum xanthocarpum* var *Jacquinii*.

HERBARIUM

The National Herbarium at Peradeniya housing the precious collection of Thwaites' numbered CP herbarium vouchers of Sri Lanka plants is now actively engaged in a revision of the Sri Lanka flora project which is a joint venture of the Smithsonian Institution in Washington DC, USA, the Botanic Gardens and the University of Sri Lanka, Peradeniya Campus.

SERVICES

Nurseries are maintained in the Botanic Gardens for the supply of the more important and interesting plants to the public and seeds are also sold. The object of the Botanic Gardens is not to make money by the sale of garden plants, but to encourage horticulture and improve the variety and quality of plants in cultivation. Seeds are also exchanged with other botanic gardens and similar institutions abroad. The Botanic Gardens also provide technical know how on the layout of parks and gardens to the public and state agencies. The services of horticultural extension officers are available for those who are actively engaged in cut-flower production. Peradeniya gardens also provide a training course for growers and young persons interested in ornamental horticulture. This course is meant for persons who wish to learn floriculture by actual practice. The Gardens also render advice on the preservation of trees with particular emphasis on historic specimens. The Sacred Bo-tree at Anuradhapura which has a recorded history of over 2000 years is being cared for by the Botanic Gardens.

The present institution called the Botanic Gardens of Sri Lanka, administered by the Department of Agriculture, comprises the Botanic Gardens at Peradeniya (60 ha situated near Kandy), Hakgala (opened in 1861, 22 ha cultivated, with a large jungle reserve) Heneratgoda (opened in 1876, 14 ha), and the Medicinal Garden at Ganewatte (1950, 20 ha).

The main feature of the Botanic Gardens at Peradeniya is the large number of ornamental and useful plants, indigenous and exotic, introduced from all parts of the world, numbering over 4000 species forming one of the most valuable collections of plants in the world. The tropical vegetation of the Gardens is characterized by the abundance of large old trees, palms, bamboos, cycads, ferns, climbing plants and epiphytes.