The Palm House

With its distinctive structure, like a graceful upturned ship's hull, the Palm House is the icon of Kew for many people. The palms and other rainforest plants it contains represent many aspects of the scientific and conservation work being carried out behind the scenes in Kew's laboratories, Herbarium and nurseries.

History

In 1841 when Sir William Jackson Hooker became Director of the Royal Botanic Gardens, Kew, the Gardens were increased in size and came under the control of a government department for the first time. To mark their new status and the recent initiative to provide general public access, the Gardens needed a prestigious glasshouse high enough to house some of the taller palms.

The Palm House was built between 1844 and 1848, the result of a complex collaboration between the Irish ironfounder Richard Turner and the architect Decimus Burton. Turner proposed the use of a wrought iron 'deck beam' used in shipbuilding, which was strong enough to span greater widths without support. This was fitted with curved glass, tinted green to act as shading. When completed, the Palm House covered an area of 2,174 square metres, and reached a height of nearly 20 metres.

Approximately 150m to the south-east stands the Italianate Campanile, built to vent smoke from the furnaces located beneath the Palm House. The pipes leading to the chimney ran through a tunnel alongside a railway that brought fuel to the Palm House boilers and removed ashes.

Decimus Burton placed the House by an existing pond so that it would be reflected in the water. Then, the artist and garden architect William Andrews Nesfield designed the landscape to make the Palm House the focal point of two long avenues – Pagoda Vista and Syon Vista.

Victorian planting

In September 1848, the first palms (*Sabal mauritiiformis* and two species of *Phoenix*) arrived in the house with the help of engineers from Deptford Dockyard. Initially, everything was grown in containers since the floor was constructed of perforated iron grilles above the hot water pipes. After the first large beds were introduced in 1859, the improvement in the growth of the palms was remarkable. The house had never been intended solely for palms and in 1865 other tropical plants were placed amongst them. Benches along the sides, built originally for propagation but found to be too cold, held various tropical species in pots.

The Victorians were particularly fascinated by the majestic palms. By 1882, there were over 420 palm species in cultivation at Kew. These included such rarities as the Coco-de-mer *(Lodoicea maldivica)* which is famed for its huge seed, weighing up to 20kg. Complementing the palms were the cycads, a group of ancient plants related to conifers, and screwpines (*Pandanus* species) with their spirals of leaves. Among the cycads still on show is Kew's oldest glasshouse plant *Encephalartos altensteinii*, collected in South Africa in 1775.

Palm House

Plants of the Palm House today

Within the House's hot humid confines, woody plants from the world's tropical rainforests thrive. Visitors walking around the gallery can enjoy a bird's-eye view of the tree canopy, with climbers scrambling through it. Orchids, bromeliads and other epiphytes perch on tree trunks to make use of the available light. Below the canopy are various shrubs and dwarf palms, with a ground cover of shade-tolerant herbaceous plants.

The south wing holds the African flora together with plants from Madagascar, including the Triangle Palm *(Dypsis decaryii)* that is so popular in horticulture but endangered in the wild. Among the Asian, Australian and Pacific plants in the north wing is the Jade Vine *(Strongylodon macrobotrys)*, a climber with spectacular hanging flowers in an unusual shade of blue-green. Parlour palms *(Chamaedorea elegans)* and other Central and South American palm species are displayed in the centre transept. Large beds in the centre transept hold the tallest tropical tree palms, notably the fishtail palms *(Caryota)* with their distinctive leaves and *Attalea speciosa* with trunks some 15m tall.

Useful palms

In tropical countries, people often rely heavily on palms for food, shelter and fuel. The Coconut Palm *(Cocos nucifera)* is crucial to the lives of people in the Pacific Islands, southern India and Madagascar. Its multi-layered fruits provide edible flesh, which is also the source of a useful oil and coconut milk, as well as hard shells for containers and utensils, and coir fibres for rope and mats. Its trunks are used as timber for building houses and boats and its leaves provide thatch. In South-East Asia, climbing rattan palms are the source of raw materials for cane furniture as well as baskets and matting.

Tropical crops

Among the other important tropical crop plants in the Palm House are Banana *(Musa)*, Breadfruit *(Artocarpus altilis)* and Rubber *(Hevea brasiliensis)*. Giant Bamboo *(Gigantochloa verticillata)* produces 25m long stems that are useful building materials; the Annatto tree (*Bixa orellana*) supplies a widely used food colouring, and nuts from the Cola bush *(Cola nitida)* gave their name to the fizzy drink.

Palm research at Kew

Kew's diverse palm collection reflects the long-standing research programme in the Herbarium. On regular fieldtrips to the tropics of Africa and Asia, botanists study palms in their natural habitats and collect material to make preserved specimens for further research. Samples taken from the living collections in the Palm House are used for detailed investigations of flower and leaf characteristics; of pollen structure; and analysis of genetic material or chemical composition. Recent and ongoing projects include *Genera Palmarum*, an overview of the world's 191 palm genera, as well as the preparation of catalogues and descriptions of the rich palm flora of particular countries such as Madagascar and New Guinea.

Papaya *(Carica papaya)*

Lush foliage

Graceful ironwork

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