THE ROYAL BOTANIC GARDENS, KEW

CENTENARY AS A GOVERNMENT INSTITUTION

HISTORY OF THE GARDENS

BY PROF. F. O. BOWER, F.R.S.

THE origin of the Royal Botanic Gardens at Kew, like that of many other public institutions in Great Britain, may be traced to personal initiative. Though the original site was small, it has been greatly expanded under public guidance and support during the century completed on April 1, 1941. In the eighteenth century a Royal Residence, together with certain houses for accommodation of the Court, clustered about the village of Kew, while a level expanse of alluvial soil on the south bank of the Thames offered a favourable opportunity for horticulture in the relatively pure country air. The methods suggested by Bacon in his essay on gardens were doubtless practised there, and in some degree realized by the ladies of the Court, and in particular by a royal princess. For close to the village lay Kew House and grounds, which were held on lease from 1730 by Frederick, Prince of Wales. It was there that his wife, the Princess Augusta of Saxe-Gotha founded a private botanic garden upon some eleven acres of the enclosed grounds. This first scientific garden of Kew is now merged in the north-easternmost part of the present Royal Gardens. It lies close to the main entrance from Kew Green, and its site is still to-day the intensive centre of the Kew establishment.

The Princess was aided in the foundation and management of that first botanic garden at Kew by the Earl of Bute; also by the architect Sir William Chambers, who designed plant-houses, temples, the Pagoda, and other features of the grounds, after the fashion of the time; some of these are still standing. She was further helped by William Aiton, the author of "*Hortus Kewensis*", who took charge of the scientific development of the garden. On the death of Princess Augusta in 1772 the property passed into the hands of her son, George III, and it was merged into the adjoining domain of Richmond Lodge. Thus the two properties became united as the oldest part of what is now known as Kew Gardens.

The botanical interest of the garden survived these changes, though its activity slackened. Fortunately, the place of the Earl of Bute as scientific director was taken by Sir Joseph Banks.

The date of this change must have coincided nearly with his active participation in organizing Captain Cook's expedition which resulted in the first scientific exploration of Australia and New Zealand. Through him Kew was thus linked closely with botanical enterprise in distant lands. Moreover, its scope was further extended by the dispatch from Kew itself of a succession of collectors. The first of these started in 1772 for the Cape of Good Hope. The collections in the garden were thus enriched from time to time by plants newly discovered or introduced, and the prestige of the garden during a difficult period of transition was for a time upheld.

In 1820 both George III and Sir Joseph Banks died. Thereafter the garden suffered a period of neglect. For twenty years its fate hung in suspense; some even advocated its abolition as a scientific centre. But gradually public opinion began to assert itself. A committee of inquiry was appointed in 1838, with Dr. J. Lindley and Sir Joseph Paxton as its leading members. Their report sketched the ideal of an Imperial Botanical Service of which Kew should be the centre, with establishments elsewhere acting in concert with it. Towards the realization of such an ideal the subsequent development of Kew has ever since aspired, and the high degree of its success is now generally admitted.

In 1840 W. T. Aiton retired. The control of the garden was then transferred from the Lord Steward to the Commissioners of Woods and Forests. It was essential in the first place to secure as director the most able and enterprising botanist available. He was found in the person of Sir William Hooker, regius professor of botany in the University of Glasgow. As a prolific writer on descriptive botany, and as a strenuous director of the growing garden in Glasgow, he was already known throughout the scientific world. These qualifications, together with something of the *grand seigneur* in his personal manner, clearly indicated him as the right man. He took up his duties on April 1, 1841, and this date may be held as marking the birth of the modern Kew. On his arrival, Sir William Hooker found the garden

to consist of about eleven acres ; but it was in a neglected state ; moreover, it was without any residence for the director. There was no museum nor any herbarium or library except his own. All the prime requisites for the scientific conduct of a botanic garden had to be improvised. Nevertheless, in 1841 the garden, hitherto private, was thrown open to the public, and it was visited by more than nine thousand persons in that year.

Thus established as a public institution, Kew Gardens grew like a crystal in a supersaturated solution. What had been lacking was initiative. In 1842 four acres were added, near to the present main gate, and in 1844 the area was increased by forty-one acres taken from the Pleasure Grounds. Two years later fourteen more acres were added. Then the Pleasure Grounds were placed under Sir William's charge, and finally added to the garden, as well as the enclosure surrounding the Queen's Cottage. The result has been that the whole domain of Kew now extends to about 318 acres, all within a ring-fence of simple outline. These extensions of area have been accompanied by the provision of buildings, such as plant-houses, museums, Herbarium and Library. From time to time houses belonging to the Crown, and mostly facing upon Kew Green, have been absorbed for special botanical purposes, or as official residences for the senior members of the staff. Of the plant-houses the greatest is the 1844-48 Palm House built in 1845. The Temperate House was commenced in 1860, but not completed until 1899. There have also been added houses for tropical ferns ; a water-lily house, built originally for the *Victoria regia* in 1852, and the so-called T-range where the *Victoria* water-lily is raised annually from seed. These are examples of the widespread facilities for cultivation under glass. The scientific interest in the living collections really centres in the propagating pits ; but these cannot be opened to the public.

The systematic study of plants, as conducted at Kew from dried specimens, concentrates naturally upon the Herbarium, and the various museums. It will be seen in detail later, from the article written by the Director, how Sir William Hooker on his arrival in 1841 brought with him the rich collections which he had accumulated in his private house in Glasgow. But several years elapsed before these found suitable accommodation in the garden at Kew. Eventually they formed the foundations of the present museums, and of the great Herbarium. Each of these departments has been vastly increased by accession of material throughout the century now completed. The Herbarium itself is the focus of the systematic work done at Kew. It has been the source of many classical publications, such as the "*Genera Plantarum*" of Bentham and Hooker, the "*Index*

Kewensis", the "*Flora of British India*", and those of the several Dominions and Colonies of the British Empire. Hence issue such serials as the "*Icones Plantarum*" and the *Kew Bulletin*. Here also much other literary-work both of British and foreign origin is being constantly pursued. The building which houses this great "*Hortus Siccus*" and its magnificent Library originated from a private dwelling-house facing upon Kew Green. It stands on the right as one enters the Main Gate of the Gardens. But the original central block is almost lost among the large additional wings, which have become necessary to accommodate the ever-growing collections of dried plants, and the rich library so necessary for their study.

As in the animal body the co-ordinating brain is hidden away and protected in the skull, so in Kew the Director's office is protected from the public eye. In a quiet backwater, shut off from the constant stream of visitors, there is an inconspicuous brick building, not beautiful or antique, towards which the imperial interests in botany converge. Here is the centre of administration of the Gardens with its numerous staff, while from it radiates information and advice not only for those at home, but also to the Dominions and Colonies—and to foreign lands as well ; for there is an international freemasonry in science, which even war does not wholly paralyse.

Teaching, as such, is not undertaken in the Royal Gardens, though demonstration of living plants is encouraged there, while instruction deemed suitable is given to the student gardeners in training. But research has always been actively aided there, whether it be pursued by the staff or by accredited members of the public. Naturally, systematic work on dried plants is readily enough carried out in the Herbarium. But morphological or physiological research requires such accommodation as a specially designed laboratory alone could afford. The need for this became urgent as the revival of the study of those branches of the science took effect in the seventies of the last century. Through the munificence of Mr. J. Phillips Jodrell a research laboratory was built and presented by him to the Gardens in 1875. It is a small block of red brick and stone, placed in the north-eastern corner of the Gardens, close to the office-yard and propagating pits. Tyndall and Burdon Sanderson were among the earliest to use so convenient a place for research on living plants, and they have been followed by many others. In particular, some of the initial experiments leading towards the manufacture of artificial silk were carried out there—also certain remarkable experiments on the control of gaseous interchange in sub-aerial plants. Sustained inquiries on fossil plants of the Coal Period were also conducted there

by Williamson and Scott, the latter having acted for many years as honorary keeper of the Laboratory. These are merely examples of work which has been done in the Jodrell Laboratory by the long sequence of botanists who have used it. Their results have proved the value of this late adjunct to the Royal Gardens.

Nothing has marked the recent decades of botanical research more clearly than the advance of preventive practice against plant diseases, and especially those of fungal origin. Such work under Government subvention has been centred in the Imperial Bureau of Mycology. This is at present located at Kew, in a building in close juxtaposition with the Herbarium, though the autonomy

of the Bureau is still preserved. Nevertheless, in spirit and in purpose it may be held as part of the establishment at Kew, helping to round off its activities which at the first were relatively simple, but have naturally expanded as the century of its existence passed, and the science itself advanced.

This brief sketch of the origin and evolution of the establishment known as the Royal Botanic Gardens at Kew during the first century of its existence will commend it as an institution worthy of the highest esteem by the public which it serves. For its purpose is not merely as a place of joyful recreation for holiday crowds, but also as one of the most striking and least costly exponents of scientific enterprise within the British Empire.

KEW IN RECENT YEARS

BY SIR ARTHUR HILL, K.C.M.G., F.R.S.

The foundations so well and truly laid by Sir William Hooker to make the Royal Gardens at Kew a botanic garden worthy of the nation, as a place of education, healthful recreation and research, have nobly stood the test of time, and now after a hundred years, though the War, alas, has sadly curtailed normal activities, the Royal Botanic Gardens are carrying on the various lines of work much as they were envisaged by Sir William and extended by Sir Joseph Hooker and their successors. Some of them, indeed, can be traced back to the great days of Sir Joseph Banks and George III.

The general plan and functions of the Gardens have altered only in detail; additions have been made and the general amenities and beauty of the Gardens have been improved, despite the increase of London smoke and fog and its deleterious effect on vegetation and especially on coniferous trees. So much have these been affected that it has been necessary to establish a National Pinetum at Bedgebury in Kent, so that the conifers may develop to the best advantage. This joint effort of Kew and the Forestry Commission comes under the direction of Kew.

Other improvements in recent years include the addition of Cambridge Cottage and its garden, with the formation of the Museum for the display of British timbers and the products derived from them, photographs and specimens of the trees and exhibits of the fungus and other diseases to which trees are liable. By the side of the Museum medicinal plants have been planted in a series of beds around the sundial made and presented by

Sir Charles V. Boys, arranged on the plan of the botanical garden at Pisa.

The Rock Garden has been considerably enlarged at its northern end by the formation of an 'island' of Sussex sandstone almost surrounded by a stream, and two new entrances have been constructed at the northern end. The water garden, in front of Museum II, based on the design of the sunk garden at Hampton Court, with raised tanks which enable the plants to be studied with ease, has proved a considerable attraction and a very desirable addition to the Gardens. The Alpine House, the original one being the first of its kind to be erected, was entirely rebuilt and enlarged in 1938.

From the general educational point of view attention should be directed to the planting out of the tree ferns in the Tropical Fern House, and the arrangement of the epiphytic ferns and other epiphytes on tree trunks, etc., as they grow in their native forests. The stag's-horn ferns (*Platycerium*) in the centre of the House, growing on tree trunks, make a particularly fine and realistic display. Attention may also be directed to the houses devoted to the fine collection of pitcher plants, insectivorous plants and Cape Pelargoniums, the two latter having been constructed when the Economic Houses were rebuilt and much enlarged in 1930.

The gift of Mrs. Sherman Hoyt of the new Cactus House, with its painted background of the Mohave Desert, California, has enabled the public to appreciate the way these plants grow in their natural habitat—the foreground being built up with blocks of old red sandstone so closely harmonizing