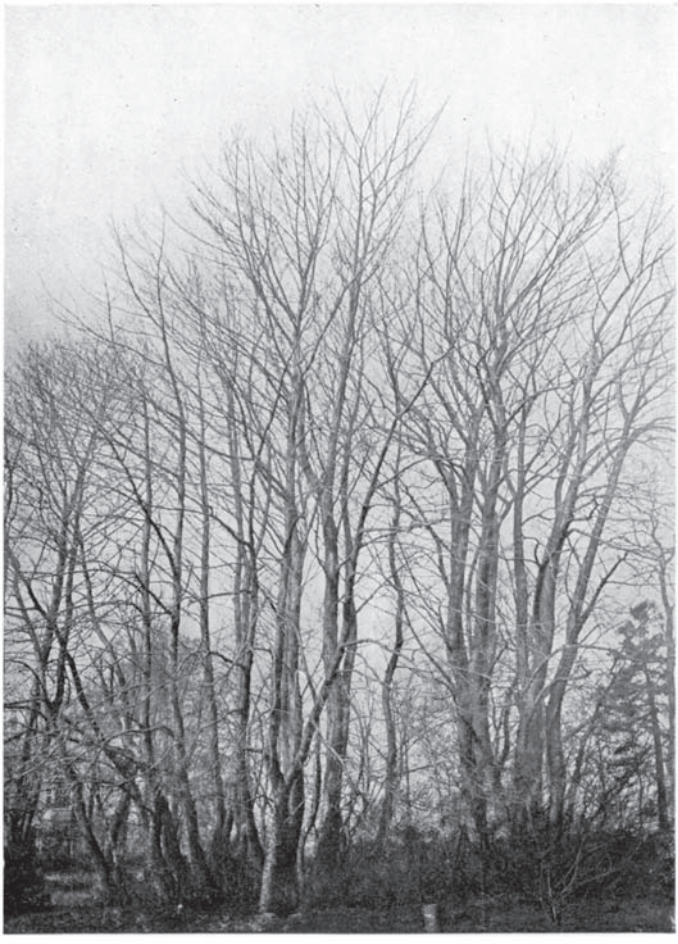
GUIDE

TO THE

UNIVERSITY BOTANIC GARDEN CAMBRIDGE

FRONTISPIECE



THE PTEROCARYA THICKET IN WINTER (NORTH-WEST CORNER OF GARDEN) (p. 37)

GUIDE

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UNIVERSITY BOTANIC GARDEN CAMBRIDGE

BY

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DIRECTOR OF THE GARDEN

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INTRODUCTION

THE sequence of the Families and Genera in this *Guide* is that of the eighth edition of the *Engler-Gilg Syllabus der Pflanzenfamilien* published in 1919. Orders are not mentioned.

It may be necessary to explain that the word *Family* in modern use is equivalent to the *Natural Order* of the older English Botanists, and that the modern *Order* is equivalent to the old-fashioned *Cohort*. The International Rules of Botanical Nomenclature adopted by the International Botanical Congress of Vienna in 1905, and Brussels, 1910, recommend that the words be used in this way; and to use them otherwise causes difficulty and confusion. The same rules recommend that the names of Orders should end in *-ales* and those of Families in *-aceae*, but they allow other terminations to be retained provided that they do not lead to confusion or error. For example the following names of Families from long usage are exceptions to the rule: *Palmae*, *Gramineae*, *Cruciferae*, *Leguminosae*, *Guttiferae*, *Umbelliferae*, *Labiatae*, *Compositae*.

The name of each species consists of two words. The first word is the *generic* name, or name of the *genus* to which the species belongs, the second is the *trivial* name. The two together constitute the *specific* name. Generic names are always written with capital letters. Certain trivial names, too, are usually written by botanists with capital letters, but in this book the practice of zoologists, and of Moss in the *Cambridge British Flora* has been followed by writing all trivial names with small letters. The name of the author of the name is placed, usually in an abbreviated form, after the trivial name. This is necessary because different botanists have sometimes given the same name to different plants. When this has happened, according to the international rules, the plant first so-named is allowed to keep the name.

For example, the Wych Elm in this country is well known by the name *Ulmus montana*. This name was given by Stokes in 1787, and is therefore written *Ulmus montana* Stokes. As the Wych Elm had already been named *U. glabra* by Hudson in 1762, the name *Ulmus montana* is not valid for it. The proper name for the Wych Elm is *Ulmus glabra* Hudson. Again, the name *Ulmus glabra* is often applied to the Smooth-leaved Elm, to which it was given by Miller in 1768. As this name had already been given to the Wych Elm in 1762, it cannot be used for the Smooth-leaved Elm, the proper name of which is *Ulmus nitens* Moench.

From these remarks it will be seen that the Law of Priority rules the questions of Botanical Nomenclature, and that the Law of Aptness holds no sway. This may seem unfair legislation, but in practice it is the only legislation possible. It is usually easy to decide which is the prior of several names, whereas the comparative aptness of names is often a matter of opinion. The starting point of the Nomenclature of the Flowering Plants and Ferns is the *Species Plantarum* of Linnaeus published in 1753.

Selecting the materials for the *Guide* has been a difficult task. The Botanic Garden of a University is the *alma ancilla* of that University's Botany School, whose refulgence it should reflect. But certain subjects are obviously better suited than others for mention in a *Guide*. For example Ecology must figure more largely than Fossil Botany, and Plant Physiology and Mycology can scarcely occupy any space at all.

It has been the happy destiny of this garden to be loved and befriended by nearly all the notable oriental scholars of the University. This connection between Oriental Studies and Botany has prompted the author to give certain eastern names of plants and quotations illustrating the use of these names.

The various Indian names mentioned are those commonly used in the north of India by Hindustani-speaking Indians. For most of the Indian words I have chosen the Arabic alphabet rather than the Nagari because it is the

proper alphabet of the dialect of Hindustani called Urdu, which, chiefly because we are very susceptible to its beauties, is much better known to the English than Hindi, whose proper alphabet is the Nagari or Sanskrit.

The author is very grateful for the assistance received during the preparation of this *Guide*. He is particularly indebted to Professor A. C. Seward, for help with the Gymnosperms; to Mr A. G. Tansley, for much help with the ecological portions; to Mr F. J. H. Jenkinson, for kindly allowing him to use the University Library, and to the staff of the University Library, particularly to Mr E. J. Thomas, for his sound guidance along many paths; to Professor E. G. Browne, for help with the Arabic and Persian, and for kindly allowing him to use his translations of some of the hemistichs quoted; to Professor H. A. Giles for help with Chinese words; to Professor Rapson for help with Sanskrit words; to Dr F. H. H. Guillemard for reading the proofs, and for several valuable suggestions; to Mr F. G. Preston, the Superintendent of the Botanic Garden, for many valuable suggestions, and for taking the photographs for several of the plates; to the editors of the *Garden*, the *Gardener's Chronicle*, and *Country Life* for permission to use plates published in their papers; to the Royal Horticultural Society for permission to reproduce a plate from the *Journal* of the Society; and to Mr Debenham and his pupils for making the map from which the plan of the garden has been prepared.

It is with special pleasure that I express my thanks to a friend to whom the University is indebted for more than one benefaction to the Botanic Garden. It is through his generosity that the publication of this *Guide* has been made possible.

H. G-C.

August 1922

HISTORICAL NOTE

WE read in the *Cambridge Portfolio* that as long ago as 1696 the ground for a Physic Garden had been measured and the plan drawn, but through some unknown impediment the scheme failed. In 1724 Professor Bradley made large but hollow promises on the subject which he publicly repeated in his lectures in 1729; but nothing was done. In 1731 there appeared more hope; for many conferences were held between the Vice-Chancellor, Professor John Martyn, and Mr Philip Miller, of the Chelsea Garden, respecting the estate of a Mr Brownell of Willingham, which was once intended to be devoted to the establishment of a Botanic Garden at Cambridge; but this estate was diverted into another channel. At length the plan was happily effected through the liberality of Dr Walker, the Vice-Master of Trinity College, who gave an estate to trustees for that purpose. The ground selected was the site of the Monastery of the Austin Friars, in the parish of St Edward's, and was purchased by Dr Walker for £1600 in 1761.

The site of this old Garden, together with five or six tenements in Free School Lane, amounting in all to over five acres, were made over to the University by an Indenture dated 24th Aug. 1762, which is in the Registrary's office.

In 1831 an Act of Parliament was obtained authorising the removal of the old Garden to its present site. The iron gates which now guard the main entrance (Pl. I) were removed from the old Garden in 1909.

Laboratories now stand on the site of the old Garden, whose sole relic is a magnificent specimen of the Chinese tree *Sophora japonica* (Pl. II) which stands beside the Pathological Laboratory.

Further historical information about the Garden will be found in the *University Historical Register* (p. 214), and in the *Cambridge Portfolio* (p. 81).

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Plan of the Garden

GLOSSARY

Androecium, the stamens of a flower taken collectively.

Apocarpous, with the carpels free one from another.

Berry, a fleshy fruit whose seeds lie free in the pulp (*see* Drupe).

Coriaceous, leathery.

Deciduous (of trees), shedding the leaves annually.

Dioecious, having staminate ('male') and carpellary ('female') flowers on separate plants.

Drupe, a fleshy fruit whose seed is contained in a hard stone (e.g. cherry, plum, olive).

Epiphyte, a plant that lives, unattached to the soil, upon another plant without being parasitic upon it (*see* Parasite).

Fastigiate, having many branches which all ascend parallel to the main stem (e.g. Lombardy Poplar).

Glaucous, sea-green.

Parasite, a plant that draws some or all of its food from another plant.

Scape, a leafless or nearly leafless flower-bearing stem which arises from the base of the plant.

Sucker, a shoot springing from the underground parts of trees and shrubs.

Syncarpous, having the carpels united together.

Whorl, several leaves arranged around the stem at one level.

Xerophilous, adapted to live where the water supply is limited.

NOTE ON LEAVES

LEAVES must not be looked upon merely as the organs which, by means of the sun's rays, build up simpler substances into the more complicated substances which are indispensable to life, but it also must be considered that it is through its leaves that the plant loses water. In general the larger the leaf the greater the loss of water a plant must suffer. Thus it becomes of interest to contemplate the leaves in relation to the plant's supply and loss of water. Plants that live in parts of the world where there is a dry season of sufficient length to embarrass water supply, lose their leaves during that season. Most of our British trees lose their leaves in winter, and our perennial herbs lose not only their leaves but also the shoots that bear them. This is not so much because cold in itself is necessarily injurious to leaves as because cold roots cannot absorb water. To the plant a dry season and a cold season are alike periods of drought Evergreen plants prevail in regions where neither drought nor cold is of sufficient severity or continuance to compel leaf-fall. The following are two interesting types of evergreen leaf.

Sclerophyllous type. Leaves of this type are small, usually entire, and rather thick and rigid.

Vegetation whose characteristic component plants bear them is peculiar to regions where the summers are hot and dry, and rain falls during the winters, which are mild.

Of sclerophyllous plants we have in the Garden, from the Mediterranean Region, for example, the Holm-oak (*Quercus ilex* L., Family *Fagaceae*), and the Olive (*Olea europaea* L., Family *Oleaceae*); from California, *Castanopsis chrysophylla* DC. (Family *Fagaceae*), and species of *Ceanothus* (Family *Rhamnaceae*). In the Temperate House will be found many sclerophyllous plants from the Australian scrub, including *Styphelia richei* Labill. (Family *Epacridaceae*), species of *Melaleuca*, *Leptospermum*, and *Callistemon* (all belonging to the Family *Myrtaceae*), and various *Proteaceae*. In the same house will be found sclerophyllous plants from South-west

Africa such as *Gnidia polystachya* Berg. (Family *Thymelaeaceae*) and species of *Phylica* (Family *Rhamnaceae*). From Chile we have *Azara microphylla* Hook. f. (Family *Flacourtiaceae*) and species of *Escallonia* (Family *Saxifragaceae*). Many other examples will be found in the Garden.

The sclerophyll is well adapted to these regions, where on the one hand neither the dry heat of summer nor the cold of winter is sufficient to compel the plants to abandon their leaves, and on the other hand the risk of drought is too great to permit the existence of a large leaf surface. None of our British plants have leaves of this type.

Laurel type. This is allied to the sclerophyll, and like it is evergreen, hairless, entire, and generally ovate or elliptical, but it differs from the sclerophyll in being much larger, less hard and rigid, and in having a surface which shines by the reflection of light. The regions it affects are more humid than those whose characteristic vegetation is sclerophyllous. Plants with leaves of this type are often called 'Laurels.'

Familiar examples are *Prunus lusitanicus* (Portugal Laurel), *Prunus laurocerasus* L., the Cherry Laurel (Family *Rosaceae*), and *Aucuba japonica* Thunb. (Family *Cornaceae*), which do not belong to the genus *Laurus*, or even to the family *Lauraceae*, yet are called laurels because their leaves are of the laurel type.

Examples of British plants whose leaves are of this type are the Holly (*Ilex aquifolium* L., Family *Aquifoliaceae*) and the Ivy (*Hedera helix* L., Family *Araliaceae*).

The leaves of some plants are intermediate between the sclerophyllous and laurel types. Familiar examples are the Strawberry Tree (*Arbutus unedo* L., Family *Ericaceae*), and the Laurustinus (*Viburnum tinus* L., Family *Caprifoliaceae*).

* * * * * *

An attempt has been made in this *Guide* to enable readers to identify our several species of Birch, Oak, Elm, and Lime, by short descriptions of the leaves of these trees. For this purpose the leaves on the older boughs of the trees should be examined, as those on suckers and young adventitious shoots often differ widely from the mature type.

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