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European Elms. There is probably more confusion in the identification and proper naming of these trees in American parks and gardens than of any other group of trees, and it is only in very recent years that English botanists have been able to reach what appear to be sound conclusions in regard to them. The confusion started with Linnaeus who believed that all the European Elms belonged to one species, and it has been increased by the appearance of natural hybrids of at least two of the species and by the tendency of seedlings to show much variation from the original types. There are five species in Europe; the first of these is

Ulmus campestris. It is this tree which is generally spoken of as the English Elm in eastern Massachusetts where it was planted more than a century ago and where it has grown to a larger size than any other tree planted in this region. The Paddock Elms, which were once the glory of Tremont Street, and the great English Elms which stood on Boston Common until a few years ago were of this species, and large specimens can still be found in the suburbs of the city. *Ulmus campestris* is a tall tree with dark rough bark, massive ascending branches, comparatively small, rough, ovate leaves with hairy petioles not more than one-fifth of an inch long, and young branchlets covered with short soft hairs. In England and the United States it very rarely produces fertile seeds but great quantities of suckers by which it is propagated. This tree possibly only grows naturally in the hedge rows and parks of southern England where it may be indigenous. It was largely planted in the Royal Park at Avanguez, near Madrid, toward the end of the sixteenth century, but it has been usually believed that these trees were imported from England. The trees,

however, at Avanguez produce fertile seeds in abundance and Henry suggests (*Trees of Great Britain*, VII. 1908) "that this tree may be a true native of Spain, indigenous in the alluvial plains of the great rivers now almost deforested." A dwarf Elm tree with small leaves is now usually considered a seedling form of *Ulmus campestris* (var. *viminalis*). There are forms in cultivation with leaves variegated with yellow (var. *viminalis aurea*) and with white (var. *viminalis marginata*).

Ulmus nitens. This is perhaps the most variable of Elm trees in habit and one of the most widely distributed of the European trees. It may be distinguished from *Ulmus campestris* by its less deeply furrowed bark, mostly glabrous branchlets, longer, often obovate leaves, lustrous and usually smooth on the upper surface, with petioles from one-quarter to one-half an inch long. The seeds of this tree have been sold for years by European seedsmen under the name of *Ulmus campestris*, and a great many specimens of this Elm have been planted in the United States in the last fifty years under that name. *Ulmus nitens* is a common tree in the southern, midland and eastern counties of England, and ranges through central and southern Europe to the Caucasus and probably to northeastern Asia. In England trees of this Elm occur with a broad head of spreading and more or less pendulous branches. This form is often called the Herefordshire Elm, as it is this particular form which is most often found in that part of England, and some of the old Herefordshire Elms are only surpassed in beauty by *Ulmus americana* as it sometimes grows in New England. The Cornish Elm, a tree with erect branches which form a narrow pyramidal head, is usually considered a variety of *Ulmus nitens* (var. *stricta*), although some modern authors treat it as a distinct species. This is the common Elm tree of Cornwall and some parts of Devonshire, and is also found in Brittany. The Guernsey, Jersey or Wheatley Elm (var. *Wheatleyi*) is another pyramidal tree which is believed to be a variety of the Cornish Elm, from which it differs in its rather broader head, its earlier flowers and wider leaves. It is sometimes called variety *sarniensis*. On one of the forms of *Ulmus nitens* (var. *suberosa*) the branchlets are furnished from the second to the tenth year with corky wings which are most developed on sucker shoots. The Elm of central Europe referred to as *Ulmus nitens* is of this variety, and young plants in the Arboretum raised from seeds collected in Hungary develop these wings when only a few years old. An interesting form of *U. nitens* (var. *umbraculifera*) is a tree with a dense globose head sent from Persia to Germany in 1878. This curious tree is doing well in the Arboretum and promises to grow here to a large size. Other interesting varieties are var. *pendula*, with very pendulous branches and branchlets, var. *Dampieri*, a fastigate tree with a narrow pyramidal crown, and var. *variegata* with leaves blotched with white. This appears to be the most common of the Silver-leaved Elms and is often seen in American collections where it grows to a large size.

Ulmus glabra. This is the so-called Scotch Elm and is also known as *U. montana* and *U. scabra*. It is a tree with wide-spreading branches making a broad, open, round or flat-topped head, large leaves broadest above the middle, often three-lobed at the apex, dark green

and very rough on the upper surface, and covered below with soft pale down; their petioles are not more than one-eighth of an inch long. This Elm can also be distinguished by the fact that the seeds of the fruit are in the middle of the surrounding wings. This tree does not produce suckers, but great crops of seeds which are blown about and germinate freely, and in this country produce innumerable plants which often become troublesome weeds. In eastern Massachusetts in recent years the leaves of this species and its varieties have been injured in early summer by the larvae of a leaf-mining insect which feed under the epidermis. *Ulmus glabra*, which owes its name to the smoothness of the pale branches, is a native of northern England and Scotland, and is widely distributed through Europe to the Caucasus, appearing again in eastern Siberia, Manchuria, northern Japan, and in northern and western China (var. *heterophylla*). Many seedling forms of *Ulmus glabra* are in cultivation. The best known, perhaps, is the Camperdown Elm (var. *pendula Camperdownii*). This has pendulous branches and branchlets which when grafted on a tall stem form a natural arbor. A handsomer weeping form is the var. *pendula*, often found in collections under the name of var. *horizontalis*. The Exeter Elm (var. *fastigiata*) is a narrow pyramidal tree with erect growing branches and branchlets. Var. *crispa* is a small tree with narrow, wrinkled, lacinate leaves and is more curious than beautiful. Var. *atropurpurea* has dark purple folded leaves and has little to recommend it as an ornamental tree.

***Ulmus laevis*.** This is the common Elm in some parts of Scandinavia, northern Russia, and occurs sparingly in Denmark and the Balkan States. This tree is very closely related to *Ulmus americana* but differs from it in the much thicker coating of down on the lower surface of the leaves and in the longer and sharp-pointed buds. The Arboretum specimen has been growing here since 1888, and although unfortunately a grafted plant is one of the handsomest Elms in the collection, now about fifty feet tall with a short trunk eighteen inches in diameter, a broad pyramidal head, and dark thick foliage. This tree is probably exceedingly rare in American collections. It might well be generally introduced into this country as it would certainly be hardy in any of the northern states and in Canada. It is sometimes called *Ulmus pedunculata* and *U. effusa*.

***Ulmus minor*.** This is a small-leaved Elm which is common in the eastern counties of England and has been reported from western Europe. It is a tree from forty to ninety feet tall with short ascending branches and pendulous branchlets, and produces suckers freely. It is often called *Ulmus sativa*. There are only young grafted plants in the Arboretum.

Hybrid Elms. A number of natural hybrids between *Ulmus glabra* and *U. nitens* have appeared in Europe. The oldest general name for these hybrids is *Ulmus hollandica*, and under existing rules of nomenclature the different hybrids of the same parentage are considered varieties. The best known of these trees in the United States is the Huntington Elm.

***Ulmus hollandica*, var. *vegeta*.** This tree, which was raised in a nursery at Huntington about the middle of the eighteenth century,

sometimes grows one hundred feet high or more, with a massive trunk and ascending or spreading branches; it suckers freely and also produces, at least in England, large crops of seeds. The Huntington Elm can be seen to great advantage in Cambridgeshire, England, where it has been largely planted, especially in Cambridge itself where there is a noble avenue of these trees. In New England it grows perhaps more rapidly than any other Elm-tree, and it is one of the best Elms to plant here.

Ulmus hollandica, var. belgica. This is another hybrid probably of the same parentage. It is a tree with a tall rough-barked stem and wide-spreading branches which form a broad head covered with dense foliage. It was cultivated in Flanders in the eighteenth century and for many years has been the principal Elm-tree planted by roadsides and in parks in Belgium and Holland. It is said that in Belgium it grows more rapidly than any other Elm-tree, and that it succeeds better on poor sandy soil than any other Elm. As it grows in the streets of the Dutch cities there is certainly no better street tree, but it is still too soon to speak of its value or of its rapidity of growth in this country, although the plants in the Arboretum are flourishing. This Elm is often sold in European nurseries as *Ulmus hollandica*. There is a variety of this tree (var. *Dumontii*), with more ascending branches which form a narrow head. This has been planted as a street tree in Europe but is believed to grow more slowly than the common form of the Belgian Elm.

Ulmus hollandica, var. Klemmer is another supposed hybrid of the same parentage, and in habit is more fastigate than the Belgian Elm. This has also been a favorite tree with Belgian and Dutch planters.

Ulmus hollandica, var. superba. This is probably another hybrid of the same parentage and is described by European dendrologists as a narrow pyramidal tree; it is therefore different from the tree in the Ellwanger & Barry Nursery at Rochester, New York, called *Ulmus superba*, which is probably only a varietal form of *Ulmus glabra* or another hybrid of that species.

Ulmus hollandica, var. major. This is also probably an English hybrid of the same parentage; it is a large dark-barked tree with wide-spreading branches and corky branchlets, and suckers freely. This tree is common in England, and it is the Elm with winged branches which is sometimes found in American collections under the name of *Ulmus campestris*. It is often called *Ulmus hollandica* and is sold in European nurseries under that name.

During the next month several interesting plants will flower in the Arboretum. Among trees may be mentioned the Chinese *Koelreuteria paniculata*, the American and Asiatic forms of *Aralia spinosa*, the Japanese *Acanthopanax ricinifolium* and *Sophora japonica*; and among shrubs the Pepper-bush of the eastern United States (*Clethra alnifolia*), which has been largely used in the roadside plantations, and *Panax sessiliflorus* from eastern Siberia which is in the *Aralia* Group near the junction of the Meadow and Bussey Hill Roads.

These bulletins will now be discontinued until autumn.