

THE AMERICAN ELM

ULMUS AMERICANA, L.

by L. L. DAME and HENRY BROOKS

The early settlers of New England inherited from their English ancestors the love of liberty and the love of home: for the maintenance of the one they planted the common school, and for the adornment of the other, the wayside tree. In front of the new house for the bride, the bridegroom placed the memorial elm. Bride and bridegroom have passed away, and generation after generation of their descendants; the old houses have mostly made way for less substantial but more showy successors, or else have been modernized out of existence; and the trees themselves of colonial date are fast disappearing.

The reasons that led to the frequent choice of the elm as a shade-tree are obvious: it is a comparatively rapid grower, is safely transplanted, requires little care, admits of the severest pruning, and combines in a remarkable degree, when old, size and beauty.

No tree varies more in general aspect. A stroll among the elms in winter, when the foliage that partially concealed their vagaries has fallen, reveals the sturdy individualism of the species.

The *vase* is the form most often assumed by the elm, when, standing in open ground, it is left free to follow its inclinations. The main trunk, reinforced in old trees by huge buttresses, and rising entire from ten to twenty-five feet, separates at length into several nearly equal branches. These rise, diverging but slightly, in straight lines or in broad curves, for thirty or forty feet farther, when they sweep outward, in wide and lofty arches with a pendent border of terminal twigs. The primary limbs, repeatedly subdividing, dissolve into a fine, leafy spray, forming a flat or slightly rounded head. The great eleva-

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THE BIG ELM, LANCASTER.

tion, the disposition of the principal limbs, and the extreme elegance of the summit make this form of elm, in the language of Michaux, "the most magnificent vegetable of the temperate zones."

The Lancaster Elm and the Brooks Elm are fine examples of this type. The vase varies according to the height of ramification.

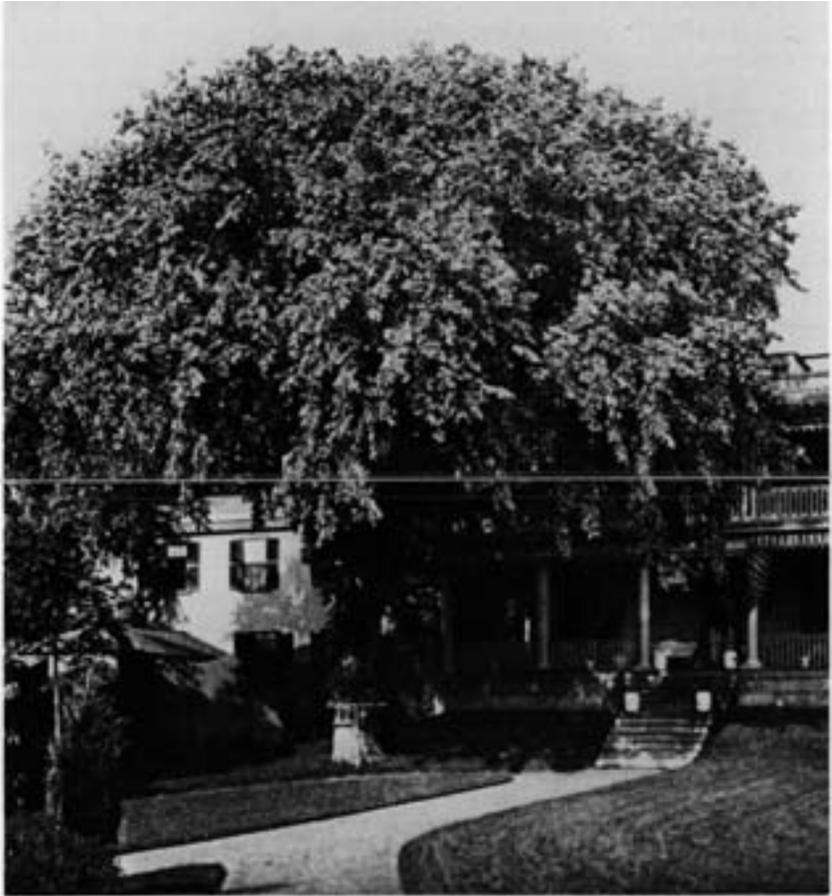
In the *weeping-willow* form the main trunk seldom exceeds ten feet in height; the branches are more slender and diverge more rapidly, describing broader arches in proportion to the height of the tree; the border of long, flexible, pendulous twigs, swaying with the slightest breeze, comes down within reach of the browsing cows, or even sweeps the ground. In summer a great tree of this form resembles simply a large shrub; it is only when the obscuring leaves have fallen that the marvellous grace of the framework is revealed. The Clark Elm, Lexington is a perfect illustration.

In the *oak-tree* type, ramification usually takes place within ten or fifteen feet of the ground; the long curves give way to straight lines and abrupt turns, the spray, even in old trees, sometimes retaining its pendulous character; the regular arches disappear, grace and symmetry being transmuted, as it were, in the alembic of Nature, into sturdiness and strength. This form is exemplified in the Pratt Elm, Concord and the Boston Elm.

As a forest-tree, the elm runs up to a great height in a single stalk, or in two or three parallel limbs, terminating in a small but graceful head, with a border of slender, pendent spray. Trees of this character, spared now and then by the early settlers in the general clearing up of the forests, standing solitary with naked trunks suggest palms stranded from the shores of tropical seas. Under this head comes the Pittsfield Elm, which fell in a gale some years ago, — a remarkable tree, which rose about a hundred feet before branching. These trees have been classified under the *plume* type; but this term is more felicitously restricted to those trees whose single stem or scarcely diverging limbs sweep out at a considerable height in long, one-sided curves, insensibly tapering to their tips, and clothed with very slender secondary branchlets and fine spray. These do not seem to be survivors of the forest, as they are not uncommon throughout the State on open land, especially on the borders of meadows. There are very few large trees among them.

All elms have a tendency to throw out small reversed branches at the point of ramification, giving rise to the appellation of *feathered* or *fringed* elms. The extent of the feathering varies from a few scattered branchlets to a net-work of short, leafy twigs, which transforms the sober trunks and sometimes the great limbs into shafts of living green.

Feathering is found in all types of elms, but noticeably less in those with broad, spreading tops, as in the oak-tree type, while it is often a conspicuous feature of the true plume type. The cause is not well understood; but wherever there are few secondary branches, with their numerous subdivisions and consequent expanse of leafy surface, it seems to be more frequent and more extended, as if it were an effort



THE BROOKS ELM, WEST MEDFORD.

of Nature to maintain the equilibrium between root and leaf development.

These graceful appendages are often lopped from the wayside trees, in cheerful unconsciousness of their aesthetic value; less frequently because it is thought they retard the development of the top.

Notwithstanding this amount of variation, no tree is more easily recognized, summer or winter; and there appear to be no forms distinctive enough for good varieties, the various types running into each other by imperceptible gradations.

In fixing the approximate age of living trees, the first requisite is the determination of the rate of growth at different periods of existence. As the range of statistics given is narrow, and the number of cases small, the results reached, while not without value within certain limits, are presented simply as a contribution for future investigation.

A comparison of over a hundred trees, ranging from ten to fifty years of age, shows an average annual increase in diameter of .48 of an inch. Of six trees in Medford forty-three years old, the smallest shows an average annual increase of .28, and the largest of .65.

In elms that have attained a longer life and greater size than usual with the species, three periods of life may be roughly outlined.

The first period covers about seventy-five years, during which the growth continues with scarcely abated vigor.

The average annual increase ranges from .22 to .70 in young trees. The Hammond Elm, it will be noted, maintained to the age of eighty-three an average of .60.

The second period extends from seventy-five to one hundred and twenty-five years, during which there is a gradual decrease in the rate of growth, the annual increase ranging from .25 to .50.

The third period covers all life beyond one hundred and twenty-five years. Within the first fifty years of this period, — often within the first twenty-five, — the annual increase falls off very rapidly, so that it can be determined only by careful measurements taken at long intervals. Under this head come the Washington and Waverly Elms, with an increase respectively of .08 and .10.

The age of trees cannot be absolutely settled by the application of an inexorable law of averages. Great size is of itself only *prima facie* evidence of great age. The ordinary conditions that govern tree-life must be taken into account.

1. *Soil.* Cold and clayey soils retard development, while the warm, deep loams of alluvial bottoms are especially favorable. The greater average increase of the Deerfield Elms is thus accounted for. Trees transplanted from the nursery or meadow can never do themselves justice in the made land of streets.

2. *Proximity to water.* The neighborhood of ponds, streams, and meadows gives us the noblest examples of the elm. Their roots often run a hundred feet or more to water, tainting wells and choking drains



THE PRATT ELM, CONCORD



FEATHERED ELM, LANCASTER

with compact fibrous masses. Concrete walks diminish the water supply, and dwarf, if they do not eventually kill, adjacent trees.

3. *Proximity of other trees.* Sunlight from all sides is essential to symmetrical development. Street elms are generally planted much too near each other, and the same fault is repeated, with less excuse, in private grounds. The slow growth of the Quincy Elms is largely due to the crowding of these trees within narrow limits. The Dexter Elm has undoubtedly exhausted the soil in its immediate vicinity, for most of its younger companions have attained, at their maturity, only a very moderate size, and already show signs of decadence.

The elms of one hundred and fifty years, however youthful a front they put on, disclose somewhere within their vast periphery, in broken branch or incipient decay, an age past their prime. Their powers of resistance have reached the maximum, although the girth and spread slowly increase, almost to the last.

Many of the noble elms mentioned by Emerson in 1846 have disappeared altogether. "The broad, magnificent head" of the elm near Breck's Garden, Lancaster, lies low; the great elm at Springfield, that enlisted in its praise the ready pens of skillful writers; the lofty elm on Pittsfield Common, — these, and others as great if not as well known, have vanished from among trees, and their place knows them not.

Others are in ruinous condition, toppling to their fall. Among them is the old elm on Heard's Island, Wayland, the "great Sheffield Elm," and the "fine old tree still [1846] in perfect vigor which" stood "by the painted gate of the Botanic Garden," Cambridge, and which was cited as an example of the "*Etruscan vase type*," forming a flat head, with pendent border.

Others, though still grand and symmetrical, afford unmistakable indications of approaching decrepitude. Few, if any, of the trees mentioned in Emerson's book give the impression of undiminished vital force.

There seems to be no reason, in the laws of tree-growth, why an elm may not live on indefinitely, stretching out its buttresses with an ever-mightier hold on earth, and expanding its summit in ever-widening arches. Considered, however, in the light of evidence, it does not rank among long-lived trees. Two hundred years is a great age; few reach two hundred and fifty; while it may be doubted if any vestige, stump, or root is to be found of an elm born three hundred years ago.

The day of destiny may be put off by minimizing the natural causes that tend towards dissolution. The exhaustion of the soil can be remedied by the restoration of the elements taken from it. When decay has already set in, the dead portions may be thoroughly removed, and the cavities filled with cement; extensive injuries have thus been treated successfully, and the cavities themselves obliterated. But the greatest peril of the tree lies in the operation of causes foreign to its own constitution. The wider the spread of its leafy sails, the more likely it is to go down before the sweep of winter's winds; and if,



THE CLARK ELM, LEXINGTON.



THE OLD ELM ON BOSTON COMMON

happily, it escapes the resistless tornado, there is no escape from the terrible pull of gravity. The constantly increasing tendency of the great diverging limbs to split asunder may be overcome for a while by bolting them together with iron rods, or propping them up with pillars, like the Neustadt lime; but there comes a day in the steady roll of the seasons when increasing weight overcomes diminishing resistance, and the shapely arches lie prostrate.

The sun of a winter morning shines down upon no spectacular display that rivals a big tree, its vast skeleton, down to the minutest twig, encased in glittering ice. This gorgeous effect is brought about at a ruinous expense. The ice-coat probably doubles the weight of the top; twigs are everywhere torn from their supports; limbs are broken off; the strain at the separation of the primary branches from the trunk — the point of greatest structural weakness — is prodigious.

A serious injury once received, the elm breaks up with great rapidity. Fifty years hence most of the elms figured in this volume, it is likely, will have become like the wrecks and memorials of a stately past.

The roadside elm will probably become less common in agricultural districts than at present, — the farmer has suffered too much from its predatory roots; but there will never be a dearth of noble trees. Thrifty elms of seventy-five to a hundred years old, ranging from nine to fifteen feet in girth, are scattered in favorable situations over the State. These will, in their turn, put on the mien of sovereignty and receive the homage of men.



The trunk of the Wethersfield Elm, Wethersfield, Connecticut In 1924, when this photo was taken, the tree was considered the largest elm in the United States, with a girth of 28 feet. Given that the Dutch elm disease arrived in this country in 1930, this tree was probably the last of the truly giant elms. Photo by E H Wilson.