The Ginkgo in America

by PETER DEL TREDICI

During the eighteenth and nineteenth centuries, private estates played a central role in the development of American horticulture. Wealthy landowners enthusiastically planted everything they could get a hold of in a spirit of experimentation. Most of these gardens are now either badly overgrown or totally destroyed. The few that remain are fully mature and give little indication of the reckless abandon with which they were originally planted.

Wodenethe, Henry Winthrop Sargent's estate in Beacon, New York, is a good example of this horticultural experimentation. Between 1840 and 1882, Sargent planted hundreds of exotic species, many of which had never been grown in this country (Sargent, 1897b). When I visited Wodenethe in the spring of 1981, very little trace of Mr. Sargent's work could be found. The main building had been razed and a housing development built on the estate. But here and there a few relics of the glorious past remained. In all, I found about twenty trees that could be traced back to Sargent's day. A beautiful old ginkgo in particular caught my eye. I felt, somehow, that I had seen this tree before. And indeed, I had, in other nineteenth century estates I had visited, where old ginkgoes had similarly survived the twin test of time and neglect.

No one appreciated the powers of endurance of *Ginkgo biloba* better than Professor C. S. Sargent, Henry Winthrop's cousin, who, writ-

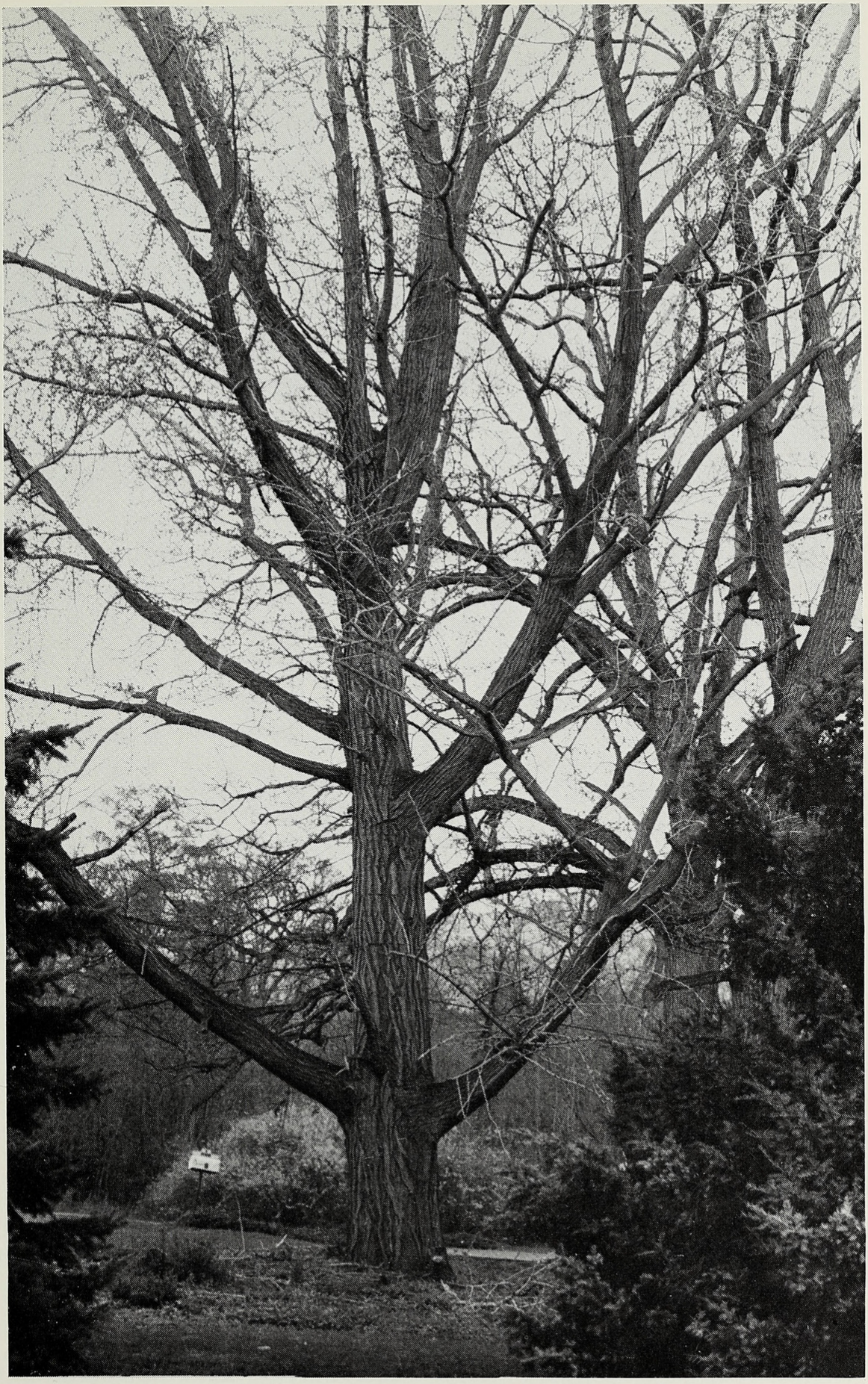

Figure 1. *The ginkgo planted by Henry W. Sargent at his estate, Wodenethe, at Beacon, New York. Photograph by P. Del Tredeci.*

ing about Wodenethe in 1897, made a prediction: "A ginkgo just beginning to emerge from its juvenile form promises to become a long lived and large tree." Not only has Sargent's prophesy come true, as can be seen from Figure 1, but the ginkgo he planted on his own estate in Brookline, Massachusetts, has also grown into a large and beautiful tree.

The survival power of the ginkgo is legendary in China, Japan and Korea, where there are many trees that are close to 1000 years old (Figure 2). One tree in Korea, reputed to be the largest in Asia, is said to be 1100 years old (Figure 3; Spongberg, 1978). It is remarkable enough for a wild tree to live this long, to say nothing of a cultivated tree. Whether the ginkgo still exists in the wild is a matter of controversy. E. H. Wilson always denied the existence of any wild ginkgoes (1916, 1919), but Li (1956) presents convincing evidence that wild trees were extant in eastern China as late as 1933. Whether these trees still exist is not known.

The ginkgo is remarkable not only for its survival through historic time, but also for its persistence through geologic time. The order to which the tree belongs, the *Ginkgoales*, can be traced back to the Permian era, almost 250 million years ago (Tralau, 1968). This is sufficiently long ago to make the *Ginkgoales* the most ancient living order of the class Gymnospermae. The genus *Ginkgo* made its first appearance in the lower Jurassic period, 180 million years ago. According to Hans Tralau, the foremost authority on fossil ginkgoes, at least four different species of Ginkgo coexisted with the dinosaurs during the Lower Cretaceous. One of these, *G. adiantoides*, possessed leaves which are considered identical to those of *G. biloba*, the species that exists today. Showing the caution characteristic of a good scientist, Tralau concludes ". . . that it might be reasonable to expect the direct predecessors of Tertiary and Recent *Ginkgo* in this part of the Lower Cretaceous population of *Ginkgo*." This direct link with ancient fossil plants gives the modern *Ginkgo biloba* a pedigree unmatched by any living tree, and is the basis of the oft repeated claim that the ginkgo has existed on earth longer than any other tree (Major, 1967).

More than one researcher has suggested that part of the explanation for the ginkgo's longevity is due to the tree's near immunity to insect damage and fungal diseases (Major, 1967). While there may be no correlation between immunity to modern pests and immunity to Cretaceous pests, the fact that pathologists consider the ginkgo ". . . less susceptible to disease, in general, than any tree grown in the United States" (Hepting, 1971), suggests that disease resistance may partly explain the ginkgo's remarkable tenacity.

Ginkgo biloba was introduced into Europe from Japan at the Botanic Garden in Utrect, Holland about 1730, where, according to Dallimore and Jackson, ". . . a tree which may be one of the original introductions is still in very good condition (1964)." The ginkgo did not officially reach North America until 1784. According to Andrew

Figure 2. *The ginkgo at Zanpukuji Temple, Tokyo, Japan. In 1914, the diameter of the tree was 9 feet and 6 inches and its height was 50 feet. The tree was approximately 700 years old. Arrow indicates the stalactite-like burls, known as "chichi" (nipples) by the Japanese. These are leafless, positively geotropic spur shoots that take root when they reach the ground and form new shoots (Fujii, 1895). Photograph by E. H. Wilson.*

Figure 3. *The ginkgo on the temple ground at Yongmun-san, Korea. The tree is about 200 feet high and about 15 feet in diameter. It is reputed to be 1100 years old. The utility pole near the base of the tree offers some scale. Photograph by R. E. Weaver, Jr.*

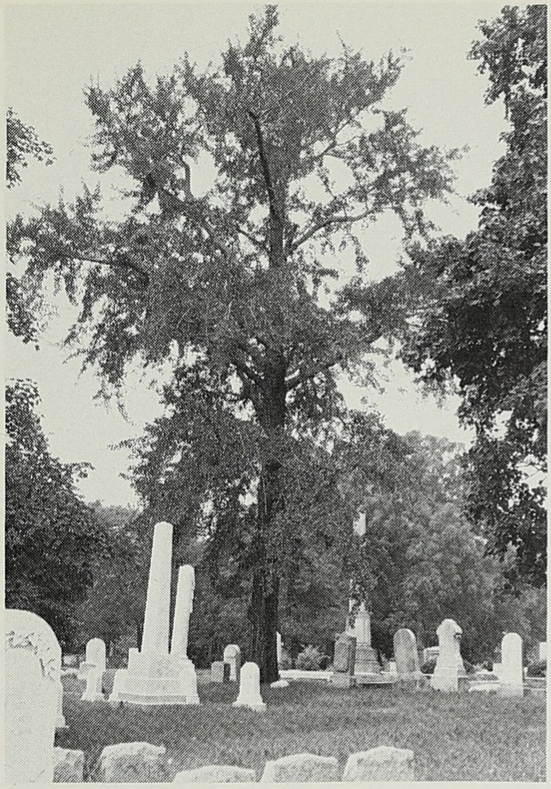

Figure 4 (left). *The male ginkgo tree in Woodlands Cemetery, Philadelphia planted in 1784 by William Hamilton. This tree, and the female shown in Figure 5, are the oldest ginkgoes in the United States. This is the same tree illustrated by Wilson (1919) and Rehder (1936). Today the tree is 68 feet tall and 30 inches in diameter.* Figure 5 (right). *The female tree at Woodlands Cemetery, Philadelphia, planted in 1784 by William Hamilton. It is 60 feet tall and 32 inches in diameter. The main axis has suffered considerable damage. Photographs by C. Hipple.*

Jackson Downing, writing in 1841, the first trees in America were planted in Philadelphia by William Hamilton on his estate "The Woodlands." Two of these original plants, a male and a female[1] still survive (Figures 4, 5). These trees, while not the most beautiful specimen ginkgoes, are the oldest plants in the country (Wilson, 1919; Rehder, 1936). Another ginkgo tree in John Bartram's garden in Philadelphia, thought to be the same age as Hamilton's trees (Wilson, 1919), is bigger than both of them and in better condition.

Downing mentions another ginkgo, ". . . standing on the north side of that fine public square, the Boston Common. It originally grew in the grounds of Gardiner Green, Esq., of Boston, but though of fine size, it was, about three years since, carefully removed to its present site, which proves its capability for bearing transplanting. Its measurement is forty feet in elevation and three in circumference." If the tree was that large three years after it was moved, it must have been nearly that large at the time of moving (Figure 6). Although this tree was standing in 1951 (Ley, 1951), it is no longer there. Unfortunately, I have not been able to learn why or when it was removed.

[1] The terms male and female are commonly used in reference to ginkgoes and other plants. While this usage is widely accepted, it is, unfortunately, botanically incorrect. To be accurate, ginkgoes should be called either microsporangiate or ovulate.

Figure 6. *The ginkgo on the Boston Common, photographed in 1919 by A. A. Greenlaw. The tree was moved to the Common in 1838 when it was 40 feet tall and one foot in diameter. In 1925 it was 55 feet tall.*

On the site of the old Harvard Botanical Garden in Cambridge, Massachusetts (now graduate student housing), a beautiful female tree, dating back at least to the days of Asa Gray, still flourishes (Figure 7). As in the other gardens I visited, it is one of the few original trees left. Large ginkgoes, of comparable size, are scattered up and down the east coast between Washington and Boston. Philadelphia seems to be particularly rich in old ginkgoes (Moore, 1943).

An isolated group of old ginkgoes once existed in Kentucky. Claxton (1940) maintains that these ginkgoes arrived at Washington, D.C. as seedlings from Japan and were subsequently sent to Kentucky by Henry Clay. As far as I have been able to determine at least two of

Figure 7. *A female ginkgo in the old Harvard Botanical Garden, Cambridge, Mass. While its exact age is unknown, a photo from 1888 shows the tree to be almost as tall and to have the same branching pattern that it does now. Today the tree is 63 feet tall and 38 inches in diameter. Note the buttressed base of the tree. Photograph by P. Del Tredici.*

these trees, a fertile male and female pair, still exist in Frankfort, on the grounds of the former Kentucky Military Institute.[2] Both trees are in rather poor condition, with the larger one measuring 27 inches in diameter. The fact that the Institute was started in the 1850's suggests that the trees were probably planted around that time. Dr. John Stewart, whose family has owned the Institute since the time of its closing in the 1890's, repeated Claxton's story that the trees came from Henry Clay and added the note that they were the first ginkgoes to be planted in Kentucky. The historical significance of these trees does not stop here, however, for Ward, writing in 1885,[3] and Sargent, in 1890, both indicate that the female of this pair was the first ginkgo in the United States reported to bear seeds. In 1890, Mr. W. R. Smith, the curator of the U. S. Botanical Gardens in Washington (Falconer, 1890) had this to say about the tree: "The female produces a large quantity of seed every year, and has been up to date our chief source of supply." Although none of these authors say when this "fruiting" first occurred, a minimum date can be established by the fact that the Arnold Arboretum received an accession of ginkgo seeds from the "Military Institute, Kentucky" on January 7, 1878. Unfortunately,

[2] The Institute is now the Stewart Home School.

[3] The statement by Ward that the first tree in the country to bear seeds was on ". . . the grounds adjacent to the University of Kentucky at Frankfort . . . " is clearly in error, given that there never was a branch of the University of Kentucky in Frankfort. Undoubtedly he was referring to the Military Institute tree.

Figure 8. *A young ginkgo tree showing the whorled, conifer-like branching habit. The angularity of the young trees harmonizes well with the sharp, straight lines of the city. Photograph by P. Del Tredici.*

none of the trees from this seed collection, if there were any, have survived.

Stunning as mature specimen ginkgoes are, they contrast strikingly with young trees, which have an awkward appearance (Figure 8). C. S. Sargent, writing in 1897, summed up the contrast between young and old trees.

> "Stiff and almost grotesque in its early years, with slender, remote, wide-spreading branches and sparse foliage, the Ginkgo does not assume its real character until it is more than a century old. There are few trees whose youth gives so little indication of future splendor; and so little picturesque is the Ginkgo in early life, and so badly does it blend with American surroundings that a great landscape gardener, knowing only young trees, declared that it could have no place in our landscape planting. If, on a bright November day, he had seen the great trees in Kamakura, or in the gardens of Asakura, in Tōkyō, he would certainly have recognized the great possibilities of the Ginkgo for picturesque planting. In the United States the Ginkgo is perfectly hardy as far north as Massachusetts, and thrives as well in the south as it does in the north. There are not, however, any very large or fine specimens in this country, although the tree planted nearly a century ago in the gar-

> den at Hyde Park, on the Hudson River, has begun to assume mature habit and shows that later generations may hope to see eastern America rival eastern Asia in its Ginkgo trees."

Once again, C. S. Sargent has proved himself to be a great prophet. This Hyde Park tree, planted by Dr. David Hosack, the founder of the Elgin Botanic Garden[4] is still standing, an inspiration to a new generation of tree planters and a tribute to the foresight of a past generation of experimenters. This is certainly the most beautiful ginkgo in North America, and also the largest I could locate (Figure 9).

The lesson in all of this is, of course, that C. S. Sargent was right. The ginkgo does grow as well in North America as it does in Asia. When planted as a specimen, unshaded by other trees, it can be counted on to live at least a hundred years and probably two hundred. It is truly remarkable that the ginkgoes which were impressive when Downing and Sargent were writing are still alive today. In eastern North America, there is no other exotic tree except perhaps the European beech, that can endure as long as the ginkgo. To quote C. S. Sargent once again, ". . . if a man wants to plant for posterity, for it must not be forgotten that it has taken from five hundred to one thousand years to build up the great ginkgoes of Japanese and Chinese temple gardens, he is reasonably safe in selecting this tree for his purpose." Indeed, William Hamilton and David Hosack will not soon be forgotten, thanks to the trees they left behind.

Acknowledgements

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Addendum:

After this article was in page proofs, the author discovered the following quotation from 1877 by C.S. Sargent (*Gardner's Monthly* 19:358): "One of the Salisburias, planted some twenty years ago in the grounds of the Kentucky Military Institute at Farmdale, Ky., and now thirty feet high, proves to be a female, and has fruited this year for the first time. I am not aware that this interesting tree has fruited before in the United States, while in Europe specimens known to be female are still very rare. Through the kindness of Prof. R.H. Wildberger,

[4] This garden, once part of Columbia University School of Medicine in New York City, is considered to be the first "actual" Botanic Garden in the United States (Rehder, 1936).

Figure 9. *Dr. Hosack's ginkgo at Hyde Park, New York, now part of the Roosevelt-Vanderbilt National Historic Sites. Just below the lowest branch, the diameter of the tree is 5 feet 5 inches. The tree is about 85 feet tall. This is the largest ginkgo that I was able to locate in North America. Note the abrupt taper of the main axis, suggestive of both* Metasequoia *and* Pseudolarix. *Photograph courtesy of the National Park Service.*

specimens of the ripe fruit are before me. Its fleshy outer covering exhales an extremely disagreeable smell of rancid butter, but the kernel is excellent with the flavor of Filberts, although more delicate. In Japan the kernels have reputed digestive qualities, and are very generally served at dessert. The cultivation of the 'Ginjko' for its fruit is one of the possibilities of American Horticulture, and is, perhaps, worth consideration."

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