

## PLATANUS OCCIDENTALIS

C. N. Gould, 1916.

*Platanus occidentalis*, the American plane tree, or button-wood, popularly known as sycamore, is one of the largest of the trees of North America. It may be classed among the semi-hydrophytes, or water-loving plants, in that in its wild state it almost always grows along stream courses and near water. The broad, graceful, branching form, and large leaves, render it an excellent shade and ornamental tree, and it is frequently transplanted to the uplands, particularly along city streets, where it grows rapidly and often attains considerable size.

The sycamore is not generally considered a useful tree. It never finds a place among the listed species of important North American hardwoods. It rots easily, warps badly, and is rarely used for lumber. About the only use to which it is put is for firewood, and even as fuel, it is by no means as satisfactory as a dozen other woods. In selecting timber for firewood the farmer

will select practically all other available trees before taking sycamore.

The genus *Platanus* has had a rather remarkable life history. In its time it was king of the forest. At the time when the oak, the elm, and the maple were small, insignificant forms, struggling for existence, the *Platanus* was one of the predominating types, with nearly a score of species, many of them very abundant, bearing large leaves, some of which were 18 inches in diameter.

The story of the *Platanus* has been preserved in the rocks. The strata of every geological age from Lower Cretaceous to the present have contributed to the record of the life history of the type. By studying the imprints of the leaves preserved in the rocks one can read the story of the incipency, the gradual growth and development, the culmination, the decadence, and almost of the death and extinction of the genus.

*Dicotyledons* first became conspicuous in the Lower Cretaceous, although they are known to occur in the Jurassic and even Triassic rocks. It so happens, however, that there have been very few leaf-bearing strata discovered in either the Triassic or Jurassic in Europe or America, and for that reason the phytopaleontologist is often at a loss for material to complete the record. The old Palaeozoic types, consisting largely of gigantic ferns, club mosses, horsetails, and rushes, that made up the coal plants, had culminated during the Pennsylvanian and Permian times, while in Triassic times they took on their lowly and subservient place in the plant kingdom which they have since retained. As the lower forms declined, the higher types increased, both in number of species, in abundance, and in size. During Jurassic and Triassic times there was considerable development of genera and species of *dicotyledons*, but unfortunately the record is nearly lost, or at least, it has not yet come to light in Europe and North America. It is to be hoped that in some of the practically unknown regions of Asia, Africa, South America, or in the Arctic regions, Triassic or Jurassic leaf-bearing strata will yet be discovered which will enable the plant paleontologist to complete his record.

At the beginning of the Comanchean, or Lower Cretaceous age, there was revealed such a wealth of *dicotyledons* as the world had never before seen. Scores of genera, and hundreds of species, of well developed forms are preserved in the rocks. The Amboy clays of New Jersey, the Eutaw beds of South Carolina, the Tuscaloosa formation of Alabama, the Cheyenne sandstone of Kansas, the Koonenia beds of the Northwest, have all contributed

to our knowledge of the subject. The Trinity sands of Oklahoma and Texas which are of the same age as the formations named, contain leaf fragments, but no determinable species have been obtained. Many species of *Platanus* are found among these various beds, and so far as I have been able to learn the largest *Platanus* leaf, if indeed not the largest fossil *dicotyledonous* leaf ever recorded, over 18 inches in diameter, came from the Koon-tenai formation of Northern Washington.

The greatest single leaf-bearing formation in the world is probably the Dakota Cretaceous sandstone. This formation underlies all the central and northern Great Plains, outcropping along the Rocky Mountains front, the Black Hills, and along a line extending from northern New Mexico, across western Oklahoma, central Kansas, eastern Nebraska, Iowa, and South Dakota, far into Minnesota. Hundreds of exposures of the dark brown Dakota sandstone throughout this area have yielded tens of thousands of *dicotyledons*, including types of not only a great part of the genera living in this country today, but also of a number of forms not now indigenous to this part of the world, such as magnolia, fig, eucalyptus, ginkgo, and the Sequoia, or big trees of California.

Among the genera found in the Dakota, one of the most abundant is *Platanus*. The leaves were not so large as in Cretaceous times, but the forms were more varied giving rise to a greater number of species. All the leaves are well formed, and symmetrical, indicating hardy and vigorous trees. Rocks of the same age as the Dakota, in Greenland, Spitzbergen, and on the Pacific Coast of the United States have yielded many species of *Platanus*. This age represented the culmination of the genus.

During Tertiary times the *Platanus* began to decline. The species became fewer, and the types of leaves were less vigorous, showing a decadence in the genus. The Tertiary of the High Plains of Beaver, Cimarron, and Texas counties, Oklahoma, have yielded a few fossil leaves, among *Platanus*, but not sufficient for specific indentifications.

In Quaternary times the *Platanus* became rare. The genus was declining rapidly. The leaf-beds found in the glacial till, and among inter-glacial deposits of Europe and America, show great number of species of such forms as oak, beech, birch, willow, liquid amber, populus, maple, and elm, and but some scant half dozen of the *Platanus*. The genus was slowly yielding to the inevitable. Having reached its culmination during the middle

Cretaceous, and having declined during Tertiary times, it was repeating in its life history, nature's inexorable law, and slowly but surely approaching the point of extermination.

But the type still persists. Tenaciously it retains its grip on life. Today but two species remain, *Platanus orientalis*, the plane tree of Europe and Asia, and *Platanus occidentalis*, the North American sycamore or button wood. No longer the king of the forest, abundant in species, widely distributed, strong hardy vigorous, predominating over the *dicotyledons* of its time, the modern decadent representative of the genus, clings to the water courses, selecting with care its environment, and like an old man, full of years, await with fortitude its inevitable destiny.