the sheets. The herbarium was started in 1914 by Eugen Wulff. It was removed from the country by the German forces during World War II, but later recovered. Today it contains 107,000 specimens; about half of these are from the Crimea. Material is exchanged with other herbaria in Russia, and with organizations abroad. No staff member seems particularly interested in the taxonomy of cultivated plants.

The library is in the administration building and has one section for literature in the Cyrillic alphabet, and another section for foreign literature. Two catalogues are maintained, one in Cyrillic and one in the other languages. About 40 percent of the library represents foreign literature, which is obtained only by exchange or gift. The resident staff, we were told, could request books from publishers' lists, but the American literature familiar to me was not apparent. We were shown current issues of four journals, *Botanical Review, Phytopathology, Genetics*, and the *Journal of Heredity*, which were photocopies prepared in the Soviet Union.

The garden itself has several entrances, and a small admission fee is charged, although a group of children appeared to be admitted without charge. This group, and others we saw, were supervised in their tour. Although we could not understand the comments, the guides (employees of the garden), talked freely in reference to plants. Individual family groups also were enjoying the garden, but without guides.

The garden is on a steep hillside with excellent views of the Black Sea. The paths are exceptionally wide, and the concrete steps between levels are arresting to the eye and contrast to the well-designed, gently sloping paths. All plants appear to be well labeled with scientific and common names, and the Latin was welcome to this visitor. Descriptive labels, some very large and complicated, are numerous, and often include the geographic origin. A large, 35-foot specimen of *Metasequoia*, the dawn redwood, an Arnold Arboretum introduction to cultivation, attracted my attention, and I was told this was an original garden introduction from China in 1952. Although this specimen was sterile, the younger plants we saw were, we were told, grown from seed obtained when plants were kept pot-bound in the greenhouse.

Although the garden has had few American professional botanists as visitors, Mrs. Howard and I were cordially welcomed. We met with seven department heads in a Board Room, at a table set for us with place mats, china and silver, water goblets and wine glasses, bowls of fruit and flowers. Each staff member described his re-

Above: Perennial plant area of the Nikita Botanic Garden with central pool for aquatic plants.

Below: Broad paths meticulously maintained traverse the garden. The palms, yuccas, and succulents suggest the subtropical environment.

search briefly. At intervals they asked questions of us. The pomologist was proud of the variety of peaches, plums, apricots and almonds offered to us, and we had to sample each type. Fruits which were out of season came into the discussion at one point, and suddenly pint canning jars of preserved fruits were brought to the table to be opened and sampled. The wines of the area were evaluated, and the best offered for our enjoyment. Chocolates and sweet cookies were passed many times. I had to report that visitors do not receive such hospitality at the Arnold Arboretum.

(All photographs in this article are by the author.)

Liriodendron tulipifera - Its Early Uses

by MARGO W. REYNOLDS

Colonial America was spawned in the forest and it was to the forest the early settlers turned for nearly all their necessities. Each successive group of English settlers to land upon North American soil must have gazed in wonder at the vast primeval wooded areas that stretched before it, their boundaries apparently limitless. It was a very different world from the one the immigrants had left behind, for the England of the late 16th and early 17th centuries was in the throes of a severe timber crisis. Wood was in short supply throughout Great Britain and large areas of forest were rapidly turning into countryside and fields.

Great Britain had shown little interest in the New World in the hundred years following Columbus' discovery. However, with their own forest reserves rapidly dwindling away in the late 1600's, there was sudden impetus to exploit America's untapped wilderness. In 1584, the English geographer, Richard Hakluyt, proposed a scheme for colonization. As he envisioned it, according to Charles Carroll, "men from the treeless English countryside would settle in the forests, set up sawmills, and produce boards for English craftsmen."

Once the operations were set up, craftsmen would begin making pipe staves, bows, "targets of Elme and tough wood, for use against the darts and arrowes of Salvages [and] spades like those of Devonshire, and of other sorts, and shovels from time to time for common use." It was some time, however, before this vision became a reality. There were very few craftsmen among the first settlers and most communities fashioned dwellings and the necessary tools and utensils as best they could. For the most part they were crude but serviceable.

Pine, oak, walnut, butternut, and chestnut were among the preferred woods for colonial furniture making and sundry other purposes, but another wood, less known, served the colonists reliably and well and continues to be of value even today. I refer, of course, to the native American tulip tree, *Liriodendron tulipifera.*

The tulip tree has scarcely any equals in the world of trees. Once seen it is rarely forgotten. Few other specimens can approach it in magnificence, overall beauty or sheer size. Few other trees masquerade under such a variety of common names, either. To the American Indians it was always known as canoewood, owing to its

Mature specimen of Liriodendron tulipifera *showing stately habit.*

extensive use in the manufacture of their dugout canoes. At various other times it has been called poplar, tulip poplar, Virginia poplar and saddle tree. Whitewood, canary whitewood, Canadian whitewood, yellow poplar and yellowwood all are monikers that refer to the color of the interior wood; depending upon the type of soil in which it is grown, the wood color varies considerably from yellow to a very pale white. No matter what its name, it has, from colonial times onward, proven to be a timber tree of great commercial and utilitarian value.

Several properties have combined to make the tulip tree adaptable for a number of commercial uses. As a wood, it does not easily warp or split and it has a close, fine, uniform grain that is much admired. It is light, elastic and easy to work and so has long been used for carved articles. Tulip wood takes both paint and varnish well and exhibits no odor. This latter property made it ideal for use by the colonists as a container for butter, cheese, lard and other foodstuffs that easily become tainted by external odors.

All manner of other containers also utilized this very adaptable wood. These ranged in size from tiny pillboxes to berry baskets to good-sized tobacco hogsheads. It was a favorite substitute for the more expensive cedar in cigar boxes. Also common throughout the colonies were Bible boxes. Treasured items in the colonial home, these items were often richly carved and ornamented, as befitted a repository for the family's most cherished possession. Colonial boxes such as these are currently quite valuable and much in demand by antique collectors.

The building trade relied on the tulip tree as well. From shingles and clapboards to joists and beams, its wood was a valuable timber in the construction of colonial dwellings. Even the Southern homes, which were generally of brick and in the Georgian style, made use of it in their interiors. For carved moldings, borders and inlays it enjoyed great popularity.

In 1856 a machine that turned nests of trays was invented, and in 1899 a wooden bowl-turning machine appeared on the market. As a result, lathe-turned woodenware for the mass market suddenly became very popular. Tulip, maple, boxwood and lignum vitae were the primary woods employed in the production of such utensils as scoops, spoons, rolling pins, wooden measuring cups and a multitude of assorted kitchen items and small children's toys.

Cherry, mahogany, maple and walnut were the most highly prized woods for fine furniture of high quality, but tulip was commonly used in the manufacture of everyday furniture. One often finds tulip wood used in the legless chests that were so much a part of the colonial home, particularly in Connecticut. Curiously enough, it was usually only the front panel that was made of tulip wood. The frame and other panels were generally made of pine or oak.

Close-up of Liriodendron tulipifera *inflorescence. Photo: P. Chvanu.*

No doubt there are two reasons to explain this rather curious use of *Liriodendron* for a single panel only. First of all, it is easily carved and so was a good subject for the ornamentation that was commonly sculpted on the front panel. In addition, tulip wood receives paint well. Painted chests represented nearly the only color in an otherwise drab colonial life and were often very richly decorated. Oak and pine insured that the chests were strong and durable while the tulip wood allowed successful carving and painting; not surprisingly, one of the most popular designs employed on these tulip wood chests was a tulip flower motif.

In addition to the wood, the tree and root bark was of value as well. It has a bitter, pungent taste and when powdered was used

as a tonic or stimulant for chronic arthritis. Not infrequently, it was given to horses as a cure for worms.

Indigenous to North America, the tulip was one of the many new species to greet the Old World explorers upon their arrival in America. *Liriodendron tulipifera* is one of two species of *Liriodendron* in the Magnolia family and enjoys a range that extends from Massachusetts and central New York and Michigan south to northern Florida. Its western boundaries extend as far as Illinois, Mississippi and Arkansas. It reaches its greatest proportions, however, in the lower Ohio valley and in the southern Appalachian mountains.

Under optimum conditions, which include a deep, loose, well-drained soil that is primarily fertile loam, tulip trees have been known to reach heights of 200 feet. What makes these trees so striking is the almost ramrod straightness of the trunk and the fact that they are almost devoid of branches for the first 40 feet or so. Until the trunk exceeds 7 or 8 inches in diameter, it is smooth and even; as the tree grows older the bark becomes deeply furrowed and quite attractive.

Above all, the tulip tree is a highly individual tree. Its leaves have the singular distinction of not really resembling any other leaf in appearance. Once seen, tulip tree leaves are quite impossible to forget. They somewhat resemble the maple leaf, with a lobe on each side, but instead of coming to a point at the tip, they look as though they had been cut off abruptly.

Unfortunately, the unusually lovely and distinctive flowers grow too high to be seen well from ground level. It is the appearance of the flowers that actually gives the tree its most common name, for they closely resemble the garden tulip in form. The large greenish-yellow flowers are marked with orange and often are nearly 2 1/2 inches long.

The flowers persist quite some time and when they at last go by they are followed by pointed, conelike seed heads which stand upright and regal on the branches. In addition to the appearance of the unusual fruits, fall brings a vibrant touch of color to the tulip tree. It becomes suffused with a delicate yellow overall, making it one of the more visible autumn specimens.

Aside from its many commercial uses, *Liriodendron tulipifera* has long enjoyed popularity as an ornamental of great merit. Where it has the advantage of a lot of open space, it grows to be a handsome tree. Increasingly, it is being used in street plantings and as an impressive shade tree in parks, cemeteries and other public grounds.

Because of its grand proportions and majestic appearance, the tulip tree came to be known as the "tree of liberty" during the Revolutionary War period. Throughout the colonies, cities and towns planted the tulip as a symbol of their quest for independence. As the nation celebrates its 200th anniversary, the Arnold Arboretum

Characteristic foliage of Liriodendron tulipifera. *Photo: P. Chvany.*

is marking the occasion by distributing small tulip trees to cities and towns throughout the state of Massachusetts. What better way to commemorate America's 200th birthday than by planting living reminders of its strength and growth? No tree is more indicative of this than the stately, elegant tulip tree.