

ENGLISH OAK-A PROMISING SHADE AND TIMBER TREE

by

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English oak (*Quercus robur* L.) is native to a great many places beside England—it grows as far north as southern Scandinavia and as far south as Spain, Turkey and north Africa.

In its native range English oak is a fine tree that is much celebrated in European literature. It is found in English houses as beams and furniture and as casks in wine cellars. In Yugoslavia and Germany there are stands that have been managed for several hundred years to produce straight-trunked, large-diameter trees that command exceptionally high prices for veneer.

So much for the Old World credentials of this species. It has been cultivated for well over a century in northeastern United States. Most arboretum and many city parks contain at least a few thrifty old specimens. Most are of broad-crowned types that are more satisfactory for shade than for timber.

In a parking lot to the rear of the old Forestry Building on the Michigan State University Campus are three specimens that are about 40 years old. We wish we knew something of their origin because they are excellent timber types. Even though growing in the open, each has maintained a single bole and a pyramidal crown two to three times as tall as broad. And all three have maintained good height growth—about 2 feet per year.

In 1959 John Bright of the Russ Forest collected acorns from one of his best native white oaks. (*Q. alba* L.) and I collected acorns from the three parking-lot trees. After 2 years in the nursery the difference between species was very noticeable—*Q. robur* was about twice as tall as *Q. alba*. It seemed desirable to test them more thoroughly and permanent test plantations were established at the Fred Russ and W. K. Kellogg Forests in southwestern Michigan. At each place 100 trees per species were planted, using 1-tree plots and a randomized complete block design, with 8- x 8-foot spacing and chemical weed control on 2-foot strips for 2 years. Mortality was low.

John Bright measured the Russ Forest plantation in 1966, when the trees were 7 years old from seed. *Q. robur* averaged 5.0 feet tall and *Q. alba* averaged 1.9 feet tall. One *Q. robur* produced two acorns. Walt Lemmien measured the Kellogg Forest trees in September 1968, at age 9 from seed. *Q. robur* averaged 12.0 feet tall and *Q. alba* 7.2 feet tall. Statistically the differences were just as significant as they had been in the nursery—94 percent of the *Q. robur* trees were taller than any *Q. alba* in the same plantation. I might add one additional note to the growth rate picture—one *Q.*

robur had a 41-inch leader and that is exceptional for southern Michigan.

George Parmelee, Curator of Woody Plants at Michigan State University, has a large task landscaping new roads and new buildings on the campus. In the past half-dozen years he has relied heavily on *Q. robur*, using trees purchased from commercial nurseries. These, which were planted as 8 to 12-foot specimens, have transplanted well and several fruited moderately heavily the second and third years after planting. Dr. Parmelee is also trying to grow trees for the campus needs and for that purpose collected seeds from the same three parking-lot trees I mentioned earlier. In two of three years he found that acorns collected in mid-September germinated a little better than did fully ripe acorns collected in mid-October.

In the nursery he has trees representing four different seed years, including a few thousand resulting from the 200-pound seed crop harvested from the 3-tree seed orchard in 1966. Under nursery conditions, Dr. Parmelee can produce 6- to 9-foot trees in 5 years.

In the two test plantations, offspring of the three good parking-lot trees resemble their parents in bole form. Nearly all are single-stemmed with relatively narrow crowns. They compare very favorably with the interspersed white oaks. Most trees which were purchased from commercial nurseries and planted on campus also seem to be developing single boles. However, there are enough broad-crowned, multi-stemmed trees in arboreta to indicate that one should be careful of seed source.

The young *Q. robur* trees have many small branches and need artificial pruning to produce quality veneer logs or to meet some shade tree needs. Early pruning to 1/3 total height has been practiced in the Russ Forest and Kellogg Forest plantations. As in *Q. alba*, this was followed by adventitious sprouting so we cannot give English oak a plus in this characteristic. Dr. Parmelee has practiced even heavier pruning in his nursery material. He experiences little adventitious sprouting, probably because of the close nursery spacing. Nor has there been much sprouting along the trunk in trees grown this way and then transferred to open locations.

Dr. Parmelee and I made a false start on an English oak improvement program in 1963, when we obtained seed from several European researchers. All the seed was packed in plastic and shipped by air because it was known to be perishable. Some arrived 5 days and some 6 weeks after collection. Only the fresh seeds germinated well. From this

experience we learned that there are racial differences worth investigating—Madrid origins grew fastest but were least hardy. We also learned that careful planning would be necessary before mounting a full-scale attack on the genetics of the species.

This English oak project, if it can be dignified by that term, has been simple but gratifying. The early results indicate a considerable growth advantage over a good native species, with tree form equal or superior to that found in *Q.*

alba. As for wood quality, European experience indicates there is little cause to worry. If we are interested in an improved tree of the white oak type --- and we should be ---- English oak furnishes a good head start.

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