

Cambridge Oak (*Quercus* × *warburgii*), An Intriguing Hybrid

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In the Arboretum Trompenburg of Rotterdam we find two specimens of *Quercus* × *warburgii* obtained from Hilliers Nursery, Winchester, UK in 1974. Since then, this oak has become more and more of a mystery for me. I wanted to know its origin, but in the literature available to me I could find some information only in Bean III, page 520 where a good description and also a history can be found. Below please find the text of W. J. Bean (*Trees and Shrubs hardy in the British Isles*):

Q. × *warburgii* Camus CAMBRIDGE OAK

Q. obtusata sens. Henry, not Humb. & Bonpl.; *Q. genuensis* Hort.;

Q. rugosa genuensis Hort.; *Q. hartwegii* var. *glabrata* Trcleasc

A semi-evergreen tree so far only known in cultivation, where it has attained a height of almost 60 ft (see below); young stems glabrous, greenish brown in late summer, ageing to greyish brown. Leaves persisting on the tree until spring, rather leathery, obovate to oblanceolate, mostly rounded at the apex, tapering from about the middle to a narrow truncate, sometimes slightly auricled base, 2 1/2 to 5 in. long, 1 1/2 to 3 in. wide, dull green and slightly rugose above, palish grey-green and rather veiny beneath, glabrous on both sides, margins shallowly and irregularly lobulate, the main lateral veins ending in short mucros; petiole glabrous, 1/4 to 1/2 in. long. Fruits borne singly or in pairs on fairly slender peduncles about 1 1/2 in. long; acorns glabrous, ovoid, about 1 in. long; cup hemispherical, enclosing about one-third of the acorn, with numerous appressed scales which are grey-hairy at the base, glabrous and brown at the tips, and decrease in size from the base of the cup upwards.

Most and probably all the trees of *Q. warburgii* in this country were distributed by the nurseryman Smith of Worcester in the 1870s, or derive from these. He had received the seeds from the Genoa Botanic Garden in 1869 under the name *Q. rugosa*, and sent out grafted plants under the name *Q. rugosa genuensis* (i.e., 'of Genoa'). In 'Elwes and Henry' (Vol. 5, p. 1312), this oak was referred to *Q. obtusata*, which, like the true *Q. rugosa*, is a Mexican species. In 1933, E. F. Warburg pointed out that this identification was incorrect and proposed for it the provisional name *Q. genuensis* Hort. (*Journ. R.H.S.*, Vol. 58, pp. 186-7). Finally, it was given botanical status by Mmc Camus in 1939 as *Q. warburgii* (*Les Chenes*, Vol. 2, pp. 621-3 and 793). She groups it with *Q. obtusata* but remarks that it differs in its smaller, more glabrous leaves, longer female catkins, and in the thinner, more appressed scales of the cups.

The status of *Q. warburgii* is uncertain. Warburg and Camus both suggested that it might be a hybrid, though neither mentioned the possibility that it might have *Q. robur* as one parent. In fact, its resemblance to the common oak is slight and anyway superficial.

The planting date and origin of the famous tree in the University Botanic Garden, Cambridge, is not certain, but, like the Kew tree, it is grafted on common oak and could be one of the set sent out by Smith of Worcester. It measures 58 x 7 1/2 ft (1969); in 1910 it was 39 ft. high (*Journ. R.H.S.*, Vol. 41, p. 8 and fig. 5). The tree at Kew, which came from Smith in 1875, measures 39 x 4 ft. (1967). Both trees bear fertile acorns quite frequently.

Owing to my curiosity, I wrote to the Botanic Garden of Cambridge for acorns. After several reminders they wrote to me that before being ripe, all acorns are eaten every year by gray squirrels and for that reason they could not comply with my requests.

In the meantime, I observed that my two specimens flowered and made acorns, notwithstanding the fact that they were only 20 years old. The reason for this early maturation in my opinion is that the grafts were not knitted very well; the trees "felt" that they would not live long and had to make sure that offspring were produced. This may be due also to the typically early maturity of one of the putative parent species, *Quercus rugosa*. Anyhow, I got my acorns!

Collecting them, I found the peduncles of the fruits to be very long – between 10 and 20 cm! I also found that the acorns were only half size of normal. Both facts Bean does not mention. Bean, however, states that it bears fertile acorns quite frequently. Apparently they did not sow them. Why?

I did sow them, and from the offspring some 30 resembled pure *Quercus robur* and only two were like the mother. However, these two seedlings are fully deciduous and somewhat less leathery. It is possible that at maturity they may become half evergreen like the mother. *Q. rugosa* has leaves with a gray back, not pubescent; the F₁ & F₂ have that same gray back.

From my investigation it seems clear that the pollen of the F₁ came from *Quercus robur*. Further evidence can be found in the fact that the F₁ peduncles of the fruits are very long. In this case properties of both parents may have caused an increase of the peduncle length via heterosis.

It is a pity that the laws of Mendel and the proofs did not show the full origin, as his proofs with peas. I would like to have found also some offspring resembling pure *Quercus rugosa*.

However, further proofs with F₂ acorns someday may show that as well. We keep sowing, and may find in this way the final proof of the origin of the other parent.

The description in Bean, coupled with my observations, leads me to suppose that *Quercus rugosa* was the F₁ mother and *Q. robur* the father. Although I am 84 now, I hope to report again when having definite proof!

