

# What is a Copper Beech?

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What sort of Plantae are we talking about in “The Adventure of the Copper Beeches”? The copper beech is a special kind of common or European beech [*Fagus (genus) sylvatica (species) purpurea (variety)*]. The last word, *purpurea*, gives us a clue to its color. It was considered a tree for the rich since it was best suited for manor houses as well as being difficult, and therefore expensive, to obtain.

The copper beech is a large tree used in extensive gardens, large estates, and parks. “Large” is the operative word here; at twenty years, its branches extend 46 feet high and 46 feet in diameter (being pretty symmetrical) and it continues to grow, sometimes up to 82 feet by 52 feet. It may live 100-200 years or more. Its branches start almost at the ground, so you may well imagine the cover gained by planting these trees together. They are often planted as a hedge. Not much sun gets to the ground around such trees, so nothing grows there.



“Recent evidence suggests that [the beech tree] did not arrive in England until about 4,000 B.C..... It could have been an early introduction by Stone Age man, who used the nuts for food. Localised pollen records have been recorded in the north of England from the Iron Age by Sir Harry Godwin....”<sup>1</sup> “The original purple-leaf beech was discovered in the Hanleiter Forest of Germany before 1772, and it became the most common beech in 19th century gardens.”<sup>2</sup> In the United States, Charles Sprague Sargent noted

the earliest appearance in a nurseryman’s catalogue in 1820. Thomas Jefferson also attempted planting copper beech trees at Monticello and was eventually successful.

Having taken care of its ancestry, let’s go back to the tree itself. This beech variety has a stout trunk—somewhat resembling an elephant’s foot, the bark being light gray and smooth, with a somewhat wrinkled appearance. The branches, as previously noted, are very long, sometimes touching the ground. Stems of this tree are olive brown. Its root system is shallow. The edges of the leaves are wavy in appearance, and there are 5 to 9 vein pairs on each leaf.

Copper beech leaves, which give the tree its distinctive color, are 2” to 4” long, and about 2” wide. Although the tree is deciduous, the leaves are apt to stay on the tree throughout the winter. This process is called *macrescence*.

The tree usually flowers in April or early May. Copper beeches are *monoecious*; that is, they have flowers that are male and flowers that are female; both are on the same tree. These flowers are not particularly showy.

As to the fruit, the nut is a triangular affair, enclosed in a spiky covering called an *involucre*. This covering has 4 lobes, each usually containing 2 nuts. It is sometimes found singly. The entire arrangement is called *beechmast*. The beechnuts mature over one season and begin to drop after the first frost opens the nuts.

Why is the beech copper or purple? “Purple leaf color in *Fagus sylvatica* is a rare spontaneous mutation. The trait is presumably inherited by a completely dominant gene.”<sup>3</sup> Plant leaves contain

pigments that give the leaves their particular color. The pigment anthocyanin is more highly concentrated in the copper beech. Each pigment absorbs a different wavelength of light, making it a different color. Anthocyanin masks the green of chlorophyll, and makes the leaves look purple or coppery.

Copper beeches are useful members of society. The words beech and book come from the same root. Ancient Saxons and Germans wrote on pieces of beech board. The trees provide food for wildlife, livestock and, at one point, people. The oil produced from beech nuts is quite delicious, but if eaten to excess, can be poisonous. Leaf buds gathered in winter can be dried and used as toothpicks. In the 19th century, England pressed the nuts for oil to be used as food and fuel for lamps. Nuts were made into flour after the poisonous tannin was leached. Beechwood is particularly well suited to furniture, as long as it is used indoors. The hardness of the wood makes for excellent mallets and workbench tops.

Our Sherlockian adventure takes place in early spring. There is a nip in the air. Watson notes, "The group of trees, with their dark leaves shining like burnished metal in the light of the setting sun, were sufficient to mark the house...." Perhaps, we, like Watson, need only appreciate the beauty of the tree.

## NOTES

1 Wikipedia

2 <http://www.monticello.org>

3 Heinze, B. & Geburch, Th., "Searching for DNA Markers Linked to Leaf Colour in Copper Beech."

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