

CASTANEA

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*Castanea dentata**

By A. B. BROOKS

The American Chestnut whose generic name, *Castanea*, has been chosen as the name of this Journal, is primarily a tree of the Appalachian region. Its geographic distribution is roughly as follows: "Southern Maine to the Valley of the Winooski River, Vermont, and southern Ontario, along the southern shore of Lake Ontario to southern Michigan, southward to Delaware and southeastern Indiana, and along the Alleghany Mountains to central Alabama and Mississippi, and to central Kentucky and Tennessee; very common on the glacial drift of the northern states and, except at the north, mostly confined to the Appalachian hills; attaining its greatest size in western North Carolina and eastern Tennessee".¹

Over much of the range of the chestnut, before its destruction by the blight, it was a dominant species, often occurring in almost pure stands, especially along the ridges which flank the higher parts of the Appalachian Mountains below the Canadian Life Zone, and sometimes appearing with the beech-birch-maple northern hardwood type of forest on the borders of the spruce belt.

Any attempt to appraise the value of the American Chestnut, to set down its many uses and recount its points of excellence, must prove inadequate and, at the same time, bring one to a fuller realization of the loss suffered through its destruction. The following statement will serve to call attention to some of the principal values of the chestnut tree:

This species was by far the best lumber-producing chestnut in the world. It grew tall and straight and reached diameters of six and seven feet. Sound, clear, or select, as well as "sound-wormy"

*The preparation of this paper, at the invitation of the Editor, signalizes the addition to the title of this Journal of the word "*Castanea*", which will hereafter be used.

¹ C. S. Sargent—"Manual of the Trees of North America."

chestnut lumber was marketed at good prices for framing, finish, base for veneer, and many other purposes. Blight-killed trees are still being thus marketed in many places. For many years this tree furnished most of the telephone and telegraph poles used in the East.



Fruits of *Castanea dentata*.

—Photograph by Fred E. Brooks.

All through the coal-mining sections of Pennsylvania, West Virginia, and other states, it was cut for mine props and tipple construction. Railroads used it, along with oak, for cross-ties. Farmers were partial to chestnut for many uses. They found it almost indispensable for dwellings, out-buildings, rail fences, posts, shingles, and incidental purposes. No other tree could take its place on the farm.

The nuts of chestnut had both a commercial and a sentimental value. "They were a source of income for the Appalachian mountaineer in many sections and for boys on the farms along the fringes of the Appalachians. Looking for the beautiful brown nuts under the trees in the woods was a lure to the hunting instincts of man. They were once produced to the extent of many millions of bushels on hundreds of thousands of square miles of the eastern United States, but only a few million pounds were sent to American markets. The

nuts were eaten along the streets, at Hallowe'en parties, and beside the open fire after supper; perhaps we should not omit their service in school to alleviate for country boys the tedium of lessons.'²²

In central West Virginia, where the writer lived on a farm the woodlands of which were well stocked with chestnut, it was the good practice of farmers to leave groups of scattered trees in certain fields as chestnut groves. These were the delightful resorts of young and old when October frosts had opened the burs and showered the nuts to the ground. So copious was the bearing in favorable seasons that often the ground underneath the trees was completely covered by the plump glossy nuts. In our grove each individual tree was regarded according to the size and quality of its nuts and each bore a descriptive name. There was the "big tree" which stood at the bottom of the hillside and bore chestnuts of unusually large size; the "little tree" whose nuts were not much larger than a beech-nut; the "early tree", which opened its burs from ten days to two weeks earlier than its associates; the "copper-head tree" beneath which a serpent of this name was once killed, but where we dared to go on account of the extra-sweet nuts which it bore; the "lightning tree", the "big fuzzy tree", the "little fuzzy tree", the "ground-squirrel tree", the "five-in-a-row trees", and so on. The choicest of the nuts were gathered and eaten fresh, roasted or boiled, or were hoarded for winter consumption. In some sections country boys and girls sold enough nuts to buy their winter clothes and school books. Various wild animals and birds, which fed principally on chestnuts produced by trees in the woods, visited also the groves and competed with human harvesters in gathering the crop of nuts. Squirrels began opening the burs before the chestnuts had turned brown; and beneath the trees could be found many remnants of nuts left from the opossum's midnight feasts. Flying squirrels, raccoons, foxes, bears, deer, wild turkeys, ruffed grouse, and other wild creatures, included chestnuts in their diet.

The chestnut blight, a fungous disease,³ which was imported from China in 1904, found the American species nonresistant and swept through the forest in spite of great effort to check its advance. "Chestnut trees, even on the extreme edges of its native territory, are being killed by the blight. This applies, for instance, to the planted trees up in Maine. Baxter writes that in Michigan the blight is kill-

² J. Russell Smith—"Tree Crops, a Permanent Agriculture", p. 117.

³ *Endothia parasitica*.

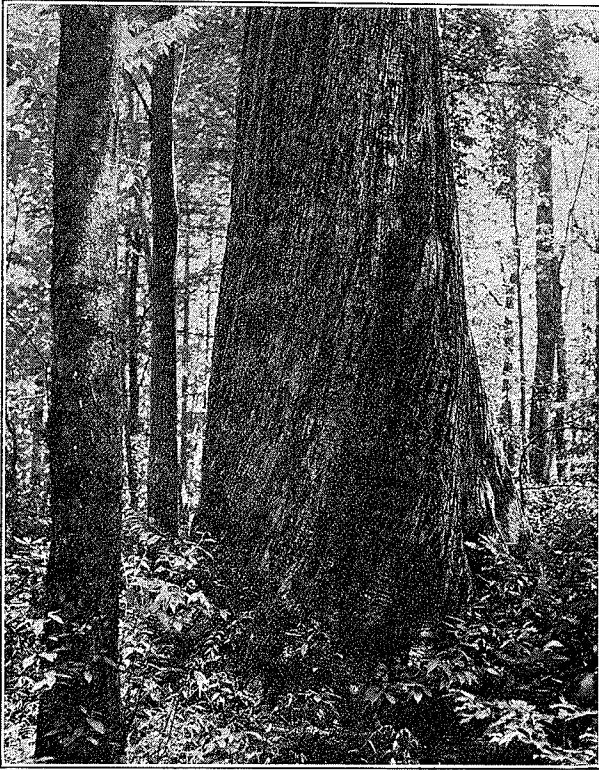
ing out the chestnut on that edge of its distribution. In Indiana it is the same thing. The blight has extended beyond the edge of the native chestnut growth in Illinois and is now found in quite a number of chestnut orchards in that state. It has a way of jumping long distances to isolated trees. Down South it is found in all the Southern States east of the Mississippi River, although we do not have definite records from Mississippi. In many sections a few of the old chestnut sprouts are continuing to hold on to life and in some cases the original trees are still producing nuts. I looked at a large chestnut tree yesterday which stands down near the Chesapeake Bay, Maryland, and has been producing good crops continuously for eight or ten years."⁴

What is the future of chestnut in the United States? Will immunity to the blight develop naturally among native trees still living? Is there promise in imported species and varieties, and in hybridizing blight-resistant trees with others having good qualities? These are the questions most frequently asked.

The matter of immunity of American chestnut is partially discussed in a foregoing quotation. Although there are isolated cases where trees have survived, it must be remembered that practically all chestnut is now dead—root, branch and sprout—throughout most of the range of the tree. As an almost invariable rule sprouts from blighted trees which live to produce nuts linger for only a few years. About the only possibility of growing chestnut in this country is found in the introduction of Chinese and Japanese species and varieties, and in hybridization. Over three thousand crosses between various chestnuts, including American, chinquapin, Asiatic and European species have been made by Federal investigators alone. From these crosses something of real value is expected, both in the way of timber and nuts, but especially of the latter.

The improvement of chestnut, which is largely carried on at present by the Divisions of Forest Pathology and Fruit and Vegetable Crops and Diseases, U. S. Bureau of Plant Industry, with extensive experimental plantings at Bell Station, Maryland, and lesser plantings at other points, follows four principal lines: Selection of native seedlings (not promising on account of blight); introduction of Old World species (Chinese and Japanese chestnut being used for hybridization); hybridization among species and varieties when grown together (only a few natural hybrids of any value); and con-

⁴ G. F. Gravatt, U. S. Bureau of Plant Industry, letter of April 12, 1937.



This magnificent specimen of *Castanea dentata* is located on Lowes Creek, Greenbrier, in the Great Smoky Mountains National Park, Sevier Co., Tennessee. It was found at 2600 ft. elevation in a virgin stand of mixed hardwoods. Associated tree species include *Liriodendron tulipifera*, *Tsuga canadensis*, *Illex opaca* (one tree at 17 in. d.b.h.) *Fagus grandifolia*, *Betula allegheniensis*, *Magnolia Fraseri*, et al.

The tree, part of which was still alive in 1936 despite severe blight damage, measures 8 feet 8 inches in diameter at 4.5 feet above the ground. Some idea of its size may be gained by noting the dog at the base in the foreground.

—Courtesy of Stanley A. Cain.

trolled hybridization. Under the last head is being done the newest and most encouraging work, as stated above. "There is little doubt that nuts from chestnut varieties will be produced in this country in paying quantities within a comparatively few years. A number of produced varieties have the elements of precocity, good bearing, hardiness, freedom from blight, and production of large nuts of

excellent quality.’⁵ The recent introduction of species and strains of horticultural and forest types, their propagation and dissemination for testing purposes over the chestnut producing areas of the United States, has been done by the Division of Forest Pathology.

It is conceivable that farmers of the Appalachian region will plant orchards of chestnut in future years, as do farmers in parts of France and other European countries, and that an important new feature of agriculture will thus come into existence. The production of annual crops, such as corn and oats, improverishes the soil and subjects it to violent erosion. When and if such chestnut production is accomplished nuts will become satisfactory substitutes for grains now being used for consumption by man and domestic animals.

Granting the possibility, or probability, of the general planting of orchards with imported or hybrid chestnut trees throughout the Appalachian Mountain region, and the production of large quantities of valuable nuts and the establishing of a new and prosperous type of permanent agriculture, those persons who have known the American Chestnut as it flourished in past years can even then reconcile themselves only with the greatest difficulty to the passing of this tree. Perhaps more than any other tree of the East chestnut became a veritable part of the life of every countryman, entering, it would seem, into nearly all of his daily activities. If in future years this journal of the Southern Appalachian Botanical Club continues its well-begun service to students of plant life, carrying a reminder of the loss of this species, perhaps it will constitute a suitable monument to the memory of the American Chestnut.

For the benefit of a certain class of readers of this Journal, the following paragraph, pertaining to species and subspecies of chestnut, is appended:

“Concerning the species of *Castanea* in their world-wide distribution, the Index Kewensis describes twenty-five species, some of which have later been put into related genera and others thrown into synonymy. At present we know of only eight or ten good species. No doubt future work in Asia will uncover several more. A list of recognized species and subspecies follows:

“American Chestnut — *Castanea dentata* Borkh.

Chinquapin — *Castanea pumila* (L.) Mill., with the following

⁵ H. L. Crane, Chief Nut Investigation Div. of Fruit and Vegetable Crops and Diseases, U. S. Bureau of Plant Industry.

closely related and possibly distinct segregates. *C. Ashei* Sudw.; *C. ozarkensis* Ashe; *C. alabamensis* Ashe; *C. floridana* (Sarg.) Ashe; *C. alnifolia* Nutt.; *C. Margaretta* Ashe. Two or three may be distinct. All lie within the range of *C. pumila* and are listed, with distributions, in Small's Manual of Southeastern Flora.

(Note: Of these "segregates", *Castanea alnifolia* the so-called trailing chinquapin, a shrub restricted to areas in the South Atlantic states, is recognized among experimenters as a distinct form.)

Chinese Chestnut — *Castanea molissima* Bl., of China and Korea.

A good-sized tree, with excellent quality nuts, introduced into this country as early as 1853, not hardy in northern states, and little used.

Japanese Chestnut — *Castanea crenata* Sieb. & Zucc. A small tree, with large nuts, coarse-grained and not sweet, introduced into this country in 1876.

Eastern and Central China Chestnut — *Castanea Seguinii* Dode. A small tree or shrub, little used.

Central and West China Chestnut — *Castanea Henryi* Rehd. & Wils. A small species which technically matches the American chinquapin. But little used.

Spanish Chestnut — *Castanea sativa* Mill. A large tree in Europe, but smaller in the United States. Nuts large and not as good quality as American and Chinese species. Introduced into this country and grafted by Thomas Jefferson as early as 1776.⁶

⁶ W. H. Camp, Asst. Curator, The New York Botanical Garden, letter of March 24, 1937.

Autumal Notes From the Carolina Blue Ridge

DONALD CULROSS PEATTIE

As the train glided down the Pacolet gorge toward Tryon, in Polk Co., North Carolina, I looked eargerly out of the window. It was ten years since I had seen this my favorite collecting ground.

Though I had published a *Flora of the Tryon Region* (Elisha Mit-