ARNOLD ARBORETUM
HARVARD UNIVERSITY BULLETIN
OF
POPULAR INFORMATION

JAMAICA PLAIN, MASS.

JULY 11, 1921

Corylus. American nut-growers are beginning to turn their attention to the cultivation of Hazel-nuts (*Corylus*) and inquiries about these plants are now often sent to the Arboretum. *Corylus* is one of the widely distributed genera of the Northern Hemisphere with species in eastern and western North America, Japan, Korea, Manchuria, and northern and western China, on the Himalayas and the Caucasus, and in western Asia and Europe. Most of the species are shrubs, but a few of them are trees of considerable size. The following species and varieties are established in the Arboretum: *Corylus americana*, *C. Avelana* and its varieties *contorta*, *pendula* and *quercifolia*, *C. californica*, *C. chinensis*, *C. Colurna*, *C. heterophylla* and its variety *sutchuenensis*, *C. maxima* and its var. *atropurpurea*, *C. rostrata*, *C. Sieboldiana* and its var. *mandschurica*, and *C. tibetica*. Three of these species are trees, *C. Colurna*, *C. chinensis* and *C. tibetica*. *Corylus Colurna*, the Turkish Hazel or Constantinople Nut, is a native of southeastern Europe and Asia Minor, and is a tree sometimes seventy or eighty feet high with a tall straight trunk from two to three feet in diameter. This handsome tree was cultivated in western Europe as early as the middle of the seventeenth century, but it is not known when it was first brought to America where it is not common and where so far as the Arboretum knows there are no large specimens. The nuts are thick-shelled, not often more than half an inch in diameter and enclosed in a husk an inch and a half across, open at the end, terminating in numerous, narrow, pointed lobes, and covered with down mixed with gland-tipped bristles. Three or four of the fruits are borne together in close clusters. *Corylus chinensis* is a native of central and western China

where Wilson saw trees of this Hazel up to one hundred and twenty feet in height with trunks from two to five feet in diameter. The nuts are small and thick-shelled and are contained in husks less deeply lobed at the apex than those of *C. Colurna* and arranged in compact clusters. The third arborescent species in the collection, *C. tibetica*, is a small tree from twenty to twenty-five feet high, or a large bush common in woods in central and western China. From the other species, with the exception of the related *C. ferox* of the Himalayas, it differs in the fruit which is covered with slender spines and arranged in compact, globose, spiny clusters which resemble a Chestnut burr.

The other species in the collection are large or small shrubs. The two eastern American species, *Corylus americana* and *C. rostrata*, are common and widely distributed woodland plants often spreading over a considerable area. The former is a shrub from three to eight feet high with glandular bristly branches and an egg-shaped, thick-shelled nut enclosed in a husk nearly twice its length and irregularly toothed at the apex. *C. rostrata* is a smaller shrub rarely more than six feet high, with branches which are not furnished with bristles and an egg-shaped, thick-shelled nut about half an inch long and enclosed in a husk contracted into a long narrow beak extending an inch or more above the nut. *C. californica* is common in the coast region of the Pacific states from Washington to California where it sometimes grows to a height of twenty feet, and, while it differs in the leaves, resembles the eastern *C. rostrata* in the beaked husk of the fruit which is, however, stouter than that of the eastern plant, and often open at the mouth.

Only the two European species, *C. Avellana* and *C. maxima*, and possibly some of their hybrids, produce nuts of commercial value as human food. The hazel or hazel-nut is produced by *Corylus Avellana*. This is widely distributed in Europe and extends into northern Africa and western Asia, and sometimes grows to a height of twenty feet and usually forms large thickets by shoots produced from the root. The nut is thin-shelled, about three-quarters of an inch in length, and about as long as its husk which has divided, often toothed lobes. As the stems are very pliable and easily trained this shrub was used to form pleached or shaded walks more commonly found in European gardens a century ago than they are today. The large dark leaves cast a dense shade and no plant with a little training is better suited to protect a walk from the sun. There are several forms of this plant selected and cultivated for their nuts which vary in size and in the thickness of the shell; and a number of varieties differing in habit or in the color and size of the leaves from the type are sometimes found in collections of ornamental plants. In the Arboretum collection are now found only the var. *pendula* with distinctly drooping branches, the var. *contorta* with curled and twisted branches, and the var. *quercifolia* with lobed leaves. These plants are curiosities, without real value as garden plants. Other varieties not in the collection are var. *aurea* with yellow leaves, var. *atropurpurea* with purple leaves, and var. *laciniata* with deeply lobed leaves. From a Hazel of southwestern Asia which is sometimes considered a variety of *C. Avellana* (var. *pontica*) and sometimes a species (*C. pontica*) the Cobnuts of commerce are at least partly obtained. This plant has not yet proved hardy in the Arboretum. A larger and more robust plant than *C. Avellana* is the Hazel of south-

ern Europe, *C. maxima*. This is a vigorous and hardy shrub with large leaves and a large oblong nut enclosed in a husk produced in a long narrow tube and nearly twice the length of the nut. It is this plant and its selected forms which produce the filberts of commerce, which are also probably obtained from hybrids of *C. maxima* and *C. Avellana*. A variety of *C. maxima* with very dark red-purple leaves is the largest and most vigorous of all purple-leaved shrubs. Of the shrubby Asiatic species in the collection *C. heterophylla* of Japan or eastern China is an oriental representative of *C. Avellana*, from which it may be distinguished by the more regular dentation of the husk. The still little known var. *sutchuenensis* of this species from western China is growing well in the Arboretum but has not yet produced fruit. *C. Sieboldiana* with the long beak to the fruit is related to the American *C. rostrata*; it is a shrub which often grows to the height of fifteen feet and differs from the Korean and Mandshurian Hazel (var. *mandshurica*), often considered a species (*C. mandshurica*) in its much shorter tube of the husk. In the collection there is also a plant for which the Arboretum is indebted to Dr. R. T. Morris of New York and which is believed to be a hybrid of *C. americana* and *C. Avellana* var. *pontica*. This hybrid, which was raised artificially by Dr. Morris, has not flowered in the Arboretum. The Arboretum still needs the following species: *Corylus ferox* and *C. Jacquemontii* of the Himalayas, *C. hallaisensis* of southern Korea, and *C. colchica* of the Caucasus. It lacks, too, many varieties of *C. Avellana* and several of its supposed hybrids.

Coluteas, or Bladder Sennas as they are popularly called, are shrubs of the Pea Family with deciduous pinnate leaves, small leaflets, long-stemmed racemes of yellow or dark orange-red flowers and large inflated reddish brown pods. The flowers open in succession from June until August, and the pods from the early flowers are fully grown when the late flowers are still opening, the flowers and fruits together making an attractive appearance, as can be seen in the Shrub Collection where three species are now covered with flowers and fruits. They are *C. arborescens*, a native of the Mediterranean region and southeastern Europe, with dull green leaves and bright yellow flowers; *C. cilicica*, a native of Asia Minor, with blue-green leaves and yellow flowers; and *C. orientalis*, a native of southeastern Europe and Asia Minor, with glaucous leaves and reddish brown flowers. There is a dwarf compact form of *C. arborescens* (var. *bullata*) in the Arboretum, but the other species and a supposed hybrid (*C. media*) between *C. arborescens* and *C. orientalis* have not succeeded here.

Shrub. This is the old and usually accepted popular name for the plants of the North American genus *Calycanthus*, famous for the fragrance of the flowers of at least one of its species. One of the three or four species, *C. occidentalis*, a native of California, although it has often been planted in the Arboretum has not proved hardy here. Two of the eastern species are now covered with flowers in the Shrub Collection where, helped by the mild winter, they are in unusually good condition. The best known species, at least in gardens, *Calycanthus floridus*, to which the name Shrub properly belongs on account of the delightful fragrance of the red-brown flowers, is better worth a place in the garden than the other species of the genus, although in Massachusetts the

1921. "Corylus." *Bulletin of popular information - Arnold Arboretum, Harvard University* 7(13), 49–51. <https://doi.org/10.5962/p.321156>.

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