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. Avellana 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. Colvrima 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. Jacqemontii* 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. cilicia*, 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
branches sometimes are severely injured by the cold of severe winters. Housewives of earlier generations carefully gathered the flowers to place among their linen which was pleasantly perfumed in this way; and the plants which produced these flowers were cherished for this purpose. From the other species *C. floridus* is distinguished by the thick coat of pale down on the lower surface of the leaves. The flowers differ somewhat in color: on a plant once cultivated by the Berckmans in their nursery at Augusta, Georgia, the flowers were yellow, and in the Arboretum collection are plants which have sometimes been referred to the rather obscure *C. Mohrii* on which the flowers are paler brown than those of the common form. These Arboretum plants were raised from seeds collected in the neighborhood of Stone Mountain, Georgia. *C. Mohrii* is said to grow in southern Tennessee and northern Alabama, and is a plant which needs investigation. The other Calycanthus now in the collection, *C. fertilis*, is distinguished by the absence of down on the lower surface of the leaves and by less fragrant or nearly scentless flowers. *C. fertilis* is a variable plant: on what is considered the type the lower surface of the leaves is pale and glaucous; on another form (var. *furcatus* or *laevigatus*) the leaves are green on the lower surface; another form (var. *minus*) only differs from the last in its smaller size and smaller flowers and fruits. This dwarf form is the most northern of these plants as it has been found on the mountains of Pennsylvania; and on the Blue Ridge of North Carolina it is common up to altitudes of from three thousand to three thousand five hundred feet. The other species and varieties are plants of lower altitudes, and the most northern station for *C. floridus* known to the Arboretum is on the cliffs of the Coosa River near Rome in northwestern Georgia. The other genus of this Family, *Chimonanthus*, from southern China, is found in most tropical and semi-tropical gardens where it is valued for its very fragrant early flowers.

**American Hydrangeas.** Of the four Hydrangeas of eastern North America the handsomest is *H. quercifolia*, with branches densely covered with rusty tomentum, deeply lobed leaves up to eight inches in length, and flowers in elongated pyramidal clusters. This shrub is a native of the extreme southern states and the stems are often killed nearly to the ground here in severe winters; this summer the plant in the Shrub Collection is in better condition than usual and is now carrying one cluster of flowers. *H. arborescens* and *H. cinerea* with flat flower-clusters are common woodland shrubs southward, and are of no great value as garden plants. There are monstrous forms of the two plants on which all the flowers are sterile, forming nearly globose white heads. This form of *H. arborescens* (var. *grandiflora*) has become in recent years a popular plant with American nurserymen, by whom it is sold in great numbers. The handsomest of the entirely hardy American species, *H. radiata*, is a native of the elevated regions of North and South Carolina. It is distinguished by its broad leaves which are dark green above and snow white below, and by its broad flat clusters of flowers surrounded by a ring of large, white, sterile flowers. In cultivation this Hydrangea is a broad and shapely shrub and one of the handsomest of midsummer flowering plants in the Arboretum. Once it was fairly common in cultivation, but from what nurserymen can it now be obtained and how many gardeners of the present day have ever seen it?