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Rhododendrons with evergreen leaves are widely scattered over temperate regions of the northern hemisphere and extend into the tropics in southern and southeastern Asia. Several hundred species are now recognized, the largest number on the eastern Himalayas and on the mountains of southwestern and western China where botanical explorers have recently found innumerable new and often handsome species. One or two species grow in northern China, two in central Japan, one in the Pacific states, and five in the Atlantic states of North America; two species grow on the mountains of central Europe and four in the Caucasus. The number of species which can be successfully grown in the Arboretum is only nine; four from eastern North America, one from Japan, one from China, one from the Caucasus and two from Europe. Of these several are rare in American gardens, in which hybrids are generally cultivated. Eastern North America is not a *Rhododendron* country. A few of them grow better on Long Island than they do in New England; they might grow more successfully in Pennsylvania and Delaware where they have not been very largely planted, or in some favored valley of the Piedmont region of Virginia or North Carolina; further south the summer sun is too hot for many of the species. On the northwest coast of this continent in western Oregon, Washington and southern British Columbia the soil, moisture and temperate climate are favorable to broad-leaved Evergreens, and it is in that region that it seems possible to establish a collection of *Rhododendrons* which might equal and perhaps surpass the great collections of southwestern England, in the best of which several hundred species now flower every year. In the United States *Rhododendrons* have

been more largely planted and better cared for in the neighborhood of Boston than in other parts of the country; and judging by the best collection in America, at least, of the so-called Catawbiense hybrids on which incessant care, intelligence and money have been expended continuously for seventy years the results which can be obtained from the cultivation of these plants in New England are not great in comparison with the results obtained in regions better suited to their requirements.

Rhododendrons usually grow on mountain slopes where, although the atmosphere is saturated with moisture, their roots are in well drained soil, and where they are often protected in winter by snow. Here in New England they grow best when planted on the north side of evergreen trees, protected from the stimulating effect of the hot sun of March which excites growth and increases the danger from late frosts. Planted in such a position at the base of Hemlock Hill in the Arboretum there are good plants of Catawbiense hybrids. Rhododendrons are not particular about soil provided it is well drained and is free of lime. A few of the new Chinese species grow naturally in limestone soil, but none of them are hardy in the eastern states. For the Rhododendrons which can be grown here lime is fatal, and persons who go on year after year trying to overcome this peculiarity of nearly all plants of the Heath Family are throwing away their labor and money. Rhododendrons suffer from insufficient moisture at the roots and cannot be safely planted within reach of the roots of vigorous trees which deprive them of it. In recent years Rhododendrons in the neighborhood of Boston have been injured by the lace wing fly, an insect brought from the south on collected plants of *Rhododendron maximum*, which discolors and kills the leaves and finally, if unchecked, the plants. This insect can be killed by any contact spray, but as they remain on the lower side of the leaves it is not always easy to reach them on large plants. Shade is unfavorable for their increase and they are more numerous on the southern than on the northern side of plants, and on plants growing in the open. Three or four broods are hatched in one season, and this means that the plants must be constantly watched and sprayed several times during the summer.

The species of Rhododendrons which have proved hardy here are the eastern American *R. maximum*, *R. catawbiense*, *R. minus* and *R. carolinianum*, the European *R. ferrugineum* and *R. hirsutum*, the Caucasian *R. Smirnowii*, the Chinese *R. micranthum* and the Japanese *R. brachycarpum*. The four American species are perfectly hardy and can be grown without difficulty. *R. maximum* is the largest of these, becoming sometimes a small tree in the sheltered valleys of the southern Appalachian mountains. It has beautiful, dark green, lustrous leaves pale on the lower surface, and clusters of pink and white flowers which do not open here until July and are a good deal hidden by the branches of the year which have nearly finished their growth before the flowers appear. *R. catawbiense* is a round-topped shrub with beautiful foliage and lilac purple flowers of a distinctly disagreeable color. It grows on the southern Appalachian Mountains, sometimes covering near the summits of the highest peaks, at altitudes of between five or six thousand feet, thousands of acres with impenetrable thickets; it occurs, too, sparingly in the Piedmont region of North Carolina,

and on the mountains of northern Alabama. *R. carolinianum* and *R. minus* are southern Appalachian species; the former is a dwarf compact shrub with leaves covered below more or less thickly with rusty brown scales, and compact clusters of small pure pink flowers which open in early spring. It grows apparently equally well in full exposure to the sun and in the shade of Pines and other trees. There is a white-flowered form with thinner, less rusty brown leaves, which is still rare in gardens and appears rather less hardy than the pink-flowered type. *R. minus* grows from low altitudes, as at the locks on the Savannah River above Augusta, Georgia, up to altitudes of thirty-five hundred feet on the Blue Ridge of North Carolina. It is a shrub sometimes ten or twelve feet tall, with leaves covered below with glandular scales and pink flowers, which in northern gardens do not open until the end of June, and after the shoots of the year have nearly attained their full growth. A fine variety of this species (var. *Harbisonii*) from northern Georgia with larger flowers is not yet in cultivation. The two European species *R. hirsutum* and *R. ferrugineum* are dwarf shrubs with small pink or carmine flowers, the former with branches covered with hairs and leaves glandular hispid on the lower surface, the latter with glabrous branchlets and leaves covered below with rusty brown scales. Of the two *R. hirsutum* has taken more kindly to cultivation, at least in the Arboretum. It can grow in soil impregnated with lime. *R. Smirnowii*, a native of the Caucasus, is said to become a tree sometimes twenty-five feet high; in the Arboretum, where it is hardy, it is a shrub four or five feet high, with oblong, acute leaves dark green above and covered below with a thick, yellowish or tawny felt which also covers the branchlets, and protects the leaves from the attacks of the lace wing fly. The flowers are bright pink and beautiful. Of the hundreds of species of *Rhododendron* which grow in China only the northern *R. micranthum* has up to this time showed itself able to support the New England climate. It is a straggling shrub with small leaves and small compact clusters of small white flowers which give to the plant the appearance of a *Ledum*. The Japanese *R. brachycarpum* is a handsome shrub with leaves which resemble those of *R. catawbiense*, and rather compact clusters of large pale pink or pale straw-colored flowers. This species, it is said, did not reach England until 1888; it was sent to the United States in 1862 by Dr. R. H. Hall, and flowered in Mr. Francis Parkman's garden in Boston a few years later. The original plant was presented by Mr. Parkman to the Arboretum where it bloomed for several years but was finally lost in transplanting. This hardy *Rhododendron* will, it is hoped, soon become common in gardens as Wilson has sent large supplies of seeds from Japan. Of these hardy species of *Rhododendron* the handsomest are *R. maximum*, *R. Smirnowii* and *R. carolinianum*, and for general cultivation here the two American species are the most desirable and the most easily obtained. In the next issue of these Bulletins some of the hardy hybrid *Rhododendrons* will be discussed.

Horsechestnuts. Many Horsechestnuts and Buckeyes are now in bloom in the collection of these trees and shrubs on the right hand side of the Meadow Road. Of the European Horsechestnuts (*Aesculus hippocastanum*) it is not necessary to speak, for one of the most splen-

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