The Firs and Spruces are among the most important timber trees of the northern hemisphere and the most important of ornamental narrow-leaved evergreen trees. In boreal regions they cover vast areas often forming pure forests enormous in extent. In both hemispheres the Firs find their southern limits just within the Tropic of Cancer, but the Spruces keep within the temperate regions. Both Firs and Spruces in northern regions grow at sea level but in temperate, and more especially warm-temperate regions, they are restricted to the higher mountains, the Firs being more alpine in character than the Spruces. The Firs form the genus Abies and the Spruces that of Picea. They bear a close resemblance one to another, indeed, there is much confusion in the lay mind as to their distinctive characters. In the Firs the cone is always erect and falls to pieces when ripe; in the Spruces the cone is pendulous and does not disintegrate at maturity. Another distinction is that in dried specimens the leaves of Spruce always fall from the branches, whereas those of the Abies remain attached. As timber producing trees the Spruces are more important than the Firs but for ornamental purposes the opposite obtains. All are tall trees, in some species approaching 200 feet in height and ranking among the loftiest and most impressive of Conifers, but in the boreal regions they are reduced to scrub. Lovers of regions where the air is pure and where they enjoy abundant moisture at the root, neither Firs nor Spruces are suitable for planting in cities or manufacturing towns. There are species suitable for almost any climate where at least a moderate rainfall prevails but none are desert plants, although a number withstand extremes of both heat and cold. Obviously those native of the mountains bordering the tropics are not suitable to the gardens of New England, neither do the more alpine species thrive at sea level. Moreover, the natives of different regions of the world behave quite differently under cultivation in eastern North America. Speaking in general, the more than fifty years experience of the Arboretum is that the Firs and Spruces of Europe and western Asia, those of Japan and Korea, and
those of Colorado grow well in Massachusetts. In western North America grow some of the noblest, tallest, and most beautiful of all the Firs but none of these is at home in the Arboretum. The two species of Fir (Abies balsamea and A. Fraseri) native of eastern North America are not happy in the Arboretum though Fraser's Fir does splendidly a few miles to the north. Of the three native species of Spruce (Picea glauca, P. mariana and P. rubra) the first-named only does moderately well in the Arboretum, the summers are a little too hot and dry for its well-being. The other two merely exist and are not worth their board and room. The Arboretum's work in the acclimatization of Conifers during more than fifty years ranks among its most important contribution to dendrology and landscape gardening. A visit to the Pinetum at any season of the year is interesting and instructive to all lovers of these trees since they may see for themselves how particular species behave in the climate of Massachusetts and judge which are of greatest value.

Of Firs or Silver Firs, as they are usually called, there are growing in the Arboretum twenty-five species and sixteen varieties. Of these, four species and three varieties are native of Europe and western Asia, five are Chinese, eight with four varieties are indigenous to Japan and Korea, six species and four varieties have their home in mid-western and western North America, while two species and five varieties are native of the Atlantic seaboard. Of the twenty-five species, eleven appear to be first-class ornamental trees but of these Abies chensiensis, A. Fargesii and A. recurvata are comparatively new introductions from China, and A. holophylla and A. koreana from Korea which have not been with us sufficiently long for a definite opinion to be expressed. The remaining six species of Fir have proved their value over half a century. One only of these is American, two are Japanese, and three hail from southwestern Europe and western Asia. First of these six Firs must be placed A. concolor, the Colorado White Fir, of which there are specimens in the Pinetum more than 65 feet tall, symmetrical in outline with branches sweeping the ground and well clothed with long spreading glaucous gray leaves. A worthy partner of this White Fir is the Nikko Fir (A. homolepis, more widely known as A. brachyphylla), a Japanese species with wide-spreading branches densely furnished with black-green leaves silvery on the under surface. The three Eurasian Firs (A. Nordmanniana, A. ciliacea and A. cephalonica) are of about equal value, each and several being of distinguished appearance and highly ornamental. The sixth Fir is A. Veitchii of Japan, a tree less tall than either of the above with a smooth, pale gray bark and short, horizontally spreading branches clothed with dark green leaves silvery on the lower surface. Of the Chinese Firs A. Fargesii with its mahogany-purple shoots and long black-green leaves silvery on the under surface is of much promise. So, too, is A. koreana, which in habit of growth somewhat resembles its relative A. Veitchii.

The Spruces are richer in species than the Firs but from the point of view of ornamental horticulture less valuable since they do not
The Colorado White Fir (*Abies concolor*).
grow old so gracefully. One and all have weak points, not least of which is their habit of sooner or later losing their lower branches. From the point of view of producing timber this is a great advantage but for ornamental purposes it is a bad defect. In the Arboretum some twenty-six species and sixty-one varieties of Spruces are growing but of the varieties no fewer than forty-one are referable to the Norway Spruce (*Picea Abies*). Of the twenty-six species, eleven give promise of being first-class ornamentals but of these the Chinese *P. asperata*, *P. Balfouriana* and *P. Wilsonii* have not been in cultivation long enough for a definite statement to be made and the same is true of the Japanese *P. Koyamai*. However, in reference to these four species it may be said that they promise well; they grow freely and have withstood with impunity the severest of New England winters experienced since their introduction some twenty years ago. Of the seven remaining Spruces, each of which has been tested for half a century in the Arboretum, the Caucasian *P. orientalis* ranks first in ornamental qualities. This tree has short, shining dark green leaves, densely arranged on the plumose branches which spread outward and downward and are upturned at their extremities. The whole tree is a symmetrical pyramid of lustrous dark green at all seasons of the year. Next in merit ranks the flat-leaved Serbian Spruce (*P. omorika*), a narrow tree with horizontally and down-spreading branches tilting upward at the tips and clothed with black-green leaves silvery on the under surface. This is a rather narrow tree but of arresting character. Its weak point is that the leading shoots, especially of young trees, suffer from boring insects. The Norway Spruce does not grow old gracefully, becoming scrawny and where it is exposed to the strong winds its leading shoots are killed and the tree dies from the top downward. However, under favorable circumstances for fifty to seventy-five years its ornamental qualities can be depended upon and if planted on a lawn where it will have plenty of room its lower branches will remain sweeping the ground for a longer period than those of any other Spruce. This well-known tree is, when in good health, strikingly beautiful with widespread horizontal branches from which long branchlets hang suspended. Probably of all Spruces none has been more widely planted than the Colorado Blue Spruce (*P. pungens*), especially its form Koster's Blue (*coerulea*). Undoubtedly, this Spruce has been greatly overplanted and, moreover, has been placed in positions totally unfitted for it, but these are faults of the landscape gardener rather than of the tree itself. Rightly placed, a Blue Spruce is a thing of beauty and for northern gardens and parks is well entitled to rank in the first half dozen Conifers. Its neighbor, *P. Engelmannii*, is also a first-class ornamental. At one time it was hoped that this species would hold its lower branches permanently when placed in open situations but experience has shown that it is no more constant in this than the Blue Spruce. In the neighborhood of Boston the summers are a little too hot for the well-being of the Canadian Spruce (*P. glauca*) but the Japanese Tiger-tail Spruce (*P. polita*) is quite at home. With its stout, pungent, dark green leaves this tree has a rather sombre appearance but is undeniably handsome. E. H. W.

These Bulletins will now be discontinued until April of next year.