position. *Abies amabilis* is not injured by cold, but has not grown better in the Arboretum than it usually grows in cultivation; and the California form of the White Fir (*Abies concolor*), lives, but does not equal here in beauty the Rocky Mountain form of this tree. Other species of the region, *Pinus Balfouriana*, *Picea Breweriana* and *Cupressus Macnabiana*, are alive but still too young to give any adequate idea of their value, and plants of the two west coast species of *Chamaecyparis* only just keep alive. The regions therefore from which conifers can be drawn for New England plantations are restricted, and it is not now probable that another species suited to this climate will be discovered, except possibly on the northwestern borders of China or on the southern slopes of the Altai Mountains. The number of species in the collection does not of course represent its richness for many conifers, especially in the genera *Picea*, *Thuja*, *Tsuga* and *Juniperus*, produce many abnormal forms and there are more of these forms in the collection than there are species.

Taxaceae. What is true of conifers in New England is true also of the related *Taxus* Family, which with five genera is represented here by *Taxus*, *Torreya* and *Cephalotaxus*, and of its sixteen species eight, with several varieties, are more or less flourishing here.

If the plants growing in the Arboretum give but a poor idea of the conifers of the world it offers in its herbarium exceptional opportunity for the study of these plants, for in the Arboretum herbarium are representatives often in long suites of specimens of all the species with the exception of a few little known trees from the interior of New Guinea and New Caledonia. The Arboretum is well provided, too, with photographs of cone-bearing plants, and in its library are found all the important books and papers which have been published on these plants.

Native Conifers. The species of northeastern North America are the White Pine (*Pinus Strobus*), the Red Pine (*Pinus resinosa*), the Pitch Pine (*P. rigida*), and the Jack Pine (*P. Banksiana*), the White Spruce (*Picea glauca*), the Red Spruce (*P. rubra*), the Black Spruce (*P. mariana*), the Balsam Fir (*Abies balsamifera*), the Hemlock (*Tsuga canadensis*), the Arborvitae (*Thuja occidentalis*), the White Cedar (*Chamaecyparis thyoides*), the Red Cedar (*Juniperus virginiana*), the common Juniper (*Juniperus communis*) and its dwarf variety *depressa*, and the prostrate *Juniperus horizontalis*. Of these plants the White Pine, the Red Pine, the Hemlock, the Red Cedar and the Arborvitae are trees of great value and beauty, but in speaking of them it must not be forgotten that the White Pine is threatened by a serious disease which makes its planting on a large scale undesirable. Among the hard Pines *Pinus resinosa* is better worth growing than any of the exotic species which have been tried here. The other native Pines have little to recommend them as ornamental or timber trees. The White Spruce, which just reaches from the north the extreme northern part of the United States, is a handsome, fast-growing tree, but in Massachusetts, where the climate is too warm for it, it is apt to grow thin and unsightly before it is fifty years old. The Red Spruce, which is the timber spruce of the northeastern states and the Appalachian Mountains, grows naturally more slowly than the other trees of New England and in the Arboretum it has never proved a success. The Black Spruce is a small tree which grows naturally in deep swamps

and has little to recommend it either as an ornamental or a timber tree. The Fir-tree, in its native swamps in the northeastern part of the country, is with its narrow pyramidal head of dark green leaves silvery white below a beautiful object, but like many other Fir-trees it does not take kindly to cultivation and in the Arboretum has never lived more than a few years. The White Cedar, too, is a hard tree to establish, and although a common native tree in the swamps of eastern Massachusetts it has not always proved hardy in the Arboretum where it has grown best on dry gravelly slopes. Few trees have shown so great seminal variation as the eastern Arborvitae, and the collection of the forms of this useful tree is one of the most interesting in the Arboretum only excelled in variety by that of the forms of the Red Cedar. No other low-growing Juniper clings so close to the ground as *Juniperus horizontalis*, and few plants make a denser mat or a better ground cover.

European Conifers in New England. Seventy-five years ago three European conifers were much planted in the northeastern United States because native trees at that time were not often found in American nurseries, and because the idea prevailed and still prevails that exotic plants were more valuable than native ones. These three conifers were the Norway Spruce so-called (*Picea Abies* or *excelsa*), the Scotch Pine (*Pinus sylvestris*) and the Austrian Pine (*P. nigra*). These are hardy, fast-growing, and for several years here handsome trees. The introduction of the Norway Spruce must be considered a misfortune, however, for New England where it was planted and is still planted as an ornamental tree in great numbers. It grows rapidly while young and often remains in good condition until it is from thirty-five to forty years old; then it begins to fail, the leading shoot dying or failing to make a satisfactory growth and all the upper part of the tree gradually becoming thin and unsightly, with the result that there is now hardly a park or a country place in New England where the sad spectacle of such half dead trees cannot be seen. Further south the Norway Spruce often promises to become a longer-lived tree; and the best specimens known to the Arboretum are in the military cemetery at Gettysburg, Pennsylvania. The Scotch Pine, which in Europe is a magnificent tree and one of the most picturesque of all Pines, is hardy and grows rapidly here, often reproducing itself from self-sown seed. When about thirty years old it has the unfortunate habit of dying suddenly without obvious cause, and it is doubtful if many Scotch Pines more than fifty years old can be found in this country. Although inferior as an ornamental tree and probably as a timber producing tree to the native Red Pine, the Austrian Pine is hardy and grows rapidly here, but like the Scotch Pine often dies suddenly when only thirty or forty years old. These three conifers are easily raised and the seed is readily obtained. The young plants grow rapidly and they are therefore profitable plants for nurserymen to handle, and the public, in spite of the American experience with them continues to buy them. In some of the states they are raised by state agencies and given away or sold at a nominal price, or planted by the states in reforestation operations. Two conifers from southeastern Europe, although still insufficiently tested in this climate, promise to be valuable here. These are a White Pine, *Pinus peuke*, and a Spruce, *Picea omorika*. The former has been growing in the Arboretum since 1883; it is quite hardy, but as an ornamental

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