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The Propagation of Woody Plants

For over fifty years there has been a steady stream of seeds and cuttings coming into the greenhouses of the Arnold Arboretum. Some of them originated nearby, many of them came from Europe or Asia, a few came from other parts of the world. In our greenhouses they have been changed into a returning stream of shrubs and trees and vines for the Arnold Arboretum and for public and private collections all over the world. Only those who have tried to propagate woody plants will realize how well we have done with the material which has come in. Trees and shrubs, unfortunately, are much more difficult to grow from seed than are garden vegetables. Not only are they more particular as to light and heat and moisture but each kind of tree or shrub is fastidious in its own way. The following summary is, therefore, little more than a signpost, giving the general course one should follow. To be complete it should include special recommendations for each kind of tree which might be grown.

By the use of three greenhouses, kept at different temperatures, we are able to satisfy the various requirements of our material. We use a warm greenhouse, a cool greenhouse, and a specially designed pit house. Certain kinds of seed are sown early: There are others which lose their vitality quickly and which must be sown as soon as they are ripe. To this class belong the Elms, Soft Maples, Poplars, Willows, Oaks and Magnolias. They are planted during the late spring, early summer and fall, and germinate that same season, all except the Magnolias.

There is another class which must be sown outside. They have seed coats so hard that actual freezing out-of-doors is desirable. Here belong the Lindens, Hard Maples, Viburnums, Roses, Plums, and the whole Walnut family including Walnuts, Butternuts, Hickories and Bitternuts.

The cool greenhouse is kept at a night temperature of 40° to 50°. In it we plant Catalpas, Ashes, Beeches, Lilacs, Cercidiphyllums, Forsythias, Privets, all species of Vitis, and all the Legume family (Wistarias, Black Locusts, etc.)

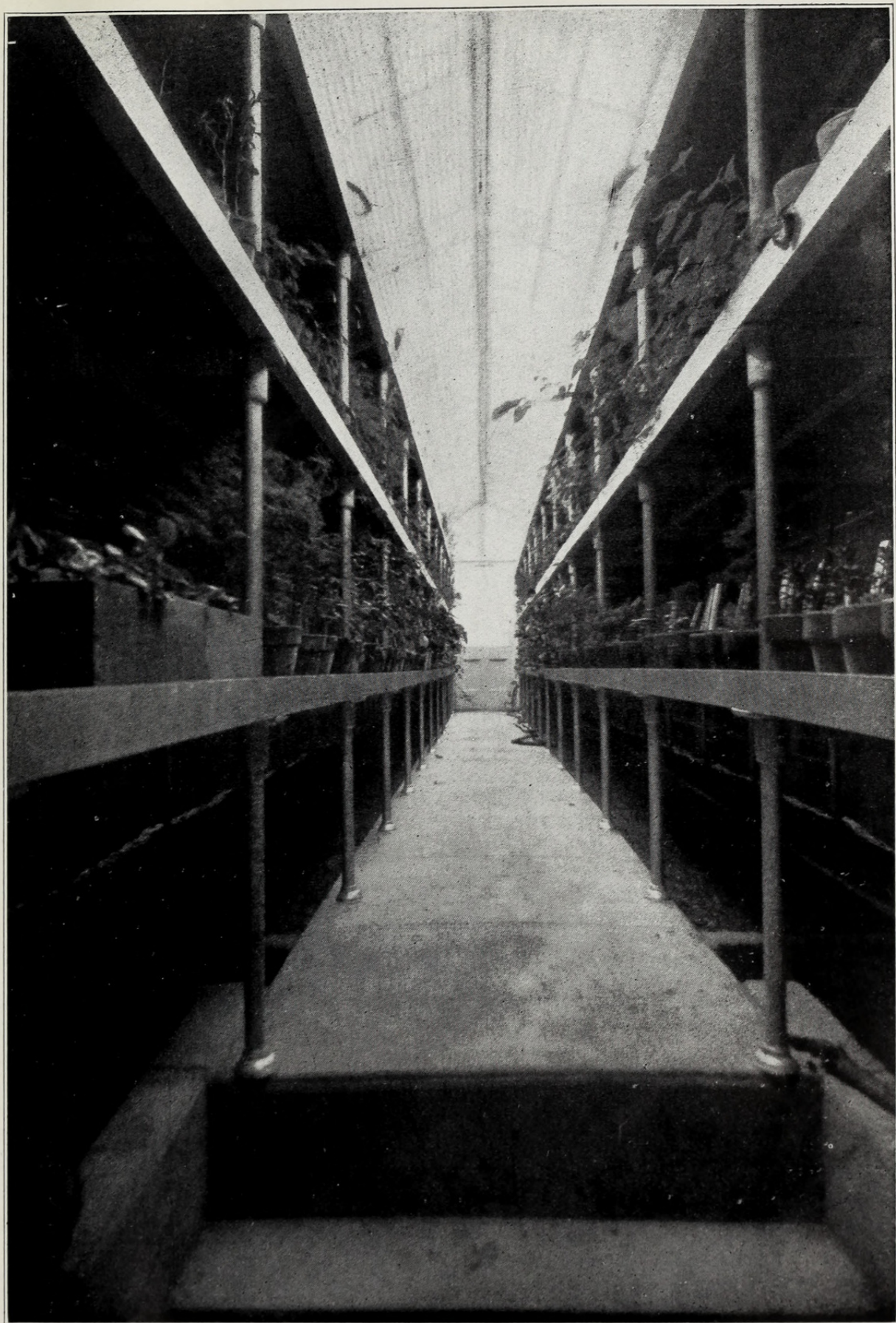
The warm greenhouse has a night temperature of 50° to 65°. It is used for Hydrangeas, Spiraeas, Deutzias, Mock-Oranges, Rhododendrons, Azaleas, and most other members of the Ericaceae or Heath family.

Our pit house is a greenhouse specially designed for use in wintering woody plants at a temperature just above freezing. It is kept between 32° and 40°, so far as that is possible, and to achieve this end it is built down into the ground. Because of its construction very little artificial heat is necessary, although it is supplied with hot water pipes for use during unusually cold weather. One door leads into the furnace room in the basement under the potting shed and on cold nights it is left slightly ajar, providing enough warmth to keep the house above freezing. At the other end of the house a flight of steps leads to an outside door. The pit is fifty feet long with a central walk, on each side of which are three shelves.

In the pit house, after they have been planted in the fall, are stored such seeds as Apples, Pears, Barberries, Aesculus, Magnolias, Oaks, Birches and Chestnuts. In this low, even temperature they germinate more readily than they would in a warmer greenhouse.

Two kinds of seed receptacles are used in the actual planting of the seeds. Those which are going out doors are planted, before the ground freezes, in shallow wooden flats. Those which are to go into the greenhouse are planted in regular clay flower pots of various dimensions, according to the number of seeds to be sown. A few kinds of seed require special soil mixtures. Seeds of the Ericaceae or Heath family, for instance, are planted in soil made up largely of peat and sand with a very little loam. For most seeds the soil is made up according to the following formula: one part sifted loam, one part well-rotted leaf mold, and a good sprinkling of sand.

Before the seeds are planted they are well cleaned. This is particularly necessary if they have a fleshy covering, since such a covering usually retards germination. Apples and Pears are quartered and the seeds are removed. With such seeds as those of Davidia the outer fleshy husk is carefully scraped away with an old knife. No seed should be deeply planted, in fact some seeds such as those of Spiraea and Rhododendron are planted on top of the prepared soil and left uncovered. For most seeds the flower pot or flat is filled to the desired height and firmed down with the hand. The seeds are planted on the soil, are sprinkled lightly with sand, and are then just barely covered with the prepared soil, which is again pressed down firmly with the hands.



View in the new Pit House at the Arnold Arboretum.



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