

an effort to avert this loss of material a method of handling these difficult cuttings without disturbing them was tried. Plastic flats were filled with rooting medium suitable for the material being tested, the cuttings inserted and the units placed in the propagating case. When rooted they were left in the flats, given a light liquid feeding, and hardened off. In November the units were transferred to cold storage and in March were returned to the greenhouse where new growth soon appeared.

Enkianthus cernuus rubens and *E. perulatus* are two subjects that have shown very poor winter survival. This slide shows 30 rooted cuttings of *E. cernuus rubens* which were left undisturbed before overwintering; all of them survived. Twenty-four cuttings of *E. perulatus* were treated similarly and of them 21 were planted out this spring and are in excellent condition. In contrast twenty-five excellently rooted cuttings of *E. perulatus* were transplanted to flats in the normal manner after rooting and in spring all were dead.

Rhododendron prunifolium which with us has always shown some losses in the first winter survived at the rate of 121 out of 130 cuttings.

Viburnum carlesii was also tried. Twenty cuttings were left undisturbed while 20 well rooted cuttings were potted. From start to finish these lots were kept side-by-side. Those not disturbed showed a complete survival while the control which was potted survived at the rate of 35% which for this plant is very good.

Not only was survival improved using this treatment, but by eliminating the intermediate steps of potting and handling time and labor were saved.

MODERATOR HILLENMEYER: Thank you, Mr. Fordham.

Our next speaker this morning is Mr. Case Mahlstedde of the Mahlstedde Brothers Nursery, Cleveland, Ohio, will speak to us on A New Technique in Grafting Blue Spruce.

A NEW TECHNIQUE IN GRAFTING BLUE SPRUCE

CASE MAHLSTEDDE

*Mahlstedde Bros. Nursery
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Advantages of grafting blue spruce on unpotted understock are: Save the time of potting up and room in the greenhouse. You can put graft lower on the understock.

The disadvantage is that the graft does not make quite the growth as on potted stock.

To begin with, we ordered 500 transplanted Norway spruce about pencil thickness for early spring delivery. We like to graft as soon after the middle of March as the stock can be had, and start grafting right away, leaving the understock in the cool barn. Take out a bundle at the time, make it ready for grafting and put on a scion 1 year's growth when heavy enough; otherwise, a scion with two

side branches. Cut on both sides. Last year we used rubber bands for tying, but they don't rot quickly enough so we are going to tie again with waxed cotton.

Our greenhouse bench is 45" wide and 13" deep and we heel in the grafts in about 8" of Canadian peat. Damp the peat just wet enough that by squeezing it hard, a couple of drops of water come out. We get 50 to 60 grafts in a row, and the rows we have about 8" apart so we can wet the peat-moss when it becomes dry without wetting the plants. The grafts are heeled in standing straight up with the grafts covered with peat. It takes about 9' of bench space for the 500. We keep the greenhouse temperature at 60-65° and on sunny days cover the grafts with newspapers. We wet every once in a while. The greenhouse is shaded by that time with white lead and gasoline which we spray on as it sticks better than anything we know. We leave them in the greenhouse 5 or 6 weeks so scion and understock are grown together.

The first week in May we like to take them out of the greenhouse and plant them outside in a bed, after cutting off about half of the understock and putting the grafts under. The bed is 6' wide and we plant the grafts 5" by 5" so it takes about 15' of bed. The understock is planted towards the outside of the bed. The bed is covered with shades and for the first 3 or 4 weeks, the shades covered with burlap. About the end of August or beginning of September the rest of the understock is cut off and the shades removed. The first winter they are covered with salt hay. From this spring's grafts, of the 500 grafted, 312 are growing. It should be more, but last spring we could not get the understock until the middle of April and we had July weather in April and May and the grafts were planted out the first week in May and were not grown together well enough. Two years ago we sold 480 1-year-olds of the 500 grafted. Last year we had the understock in the fall and cleaned them for grafting and heeled them in outside. In the spring most of the roots were rotted. I hoped that they would make new roots in the bench, but they kept on rotting and the end was that only 12 survived. The usual stand we have is 70-85%.

MODERATOR HILLENMEYER: Thank you, Mr. Mahlstedt. Our last speaker this morning is Mr. Albert Lowenfels from White Plains, New York, who will speak to us on Plastic for Greenhouses.

PLASTICS FOR GREENHOUSES

ALBERT LOWENFELS

White Plains, New York

I was having breakfast this morning with Roy Nordine. I said I was in a very fortunate position, I don't have to think of the fast buck. I have another business, so I can experiment, and in 1947 I built a greenhouse and at that time Polyflex was advertised heavily. I think I saw a house in Columbus, Ohio that had it on. So I covered my greenhouse with Polyflex and in about a year it started to