

introduction, about seven minutes for the discussion, and two or three minutes for questions. We should like to keep this session exactly on time.

The first discussion is concerned with budding. The first speaker is Mr. William Flemer of the Princeton Nurseries, Princeton, N. J. Mr. Flemer is a graduate of Yale University and, together with his father and brothers, is associated with one of the finest ornamental nurseries in the United States. Mr. Flemer will speak on the propagation of the American elm by budding.

MR. WILLIAM FLEMER, III: Thank you, Mr. Fillmore, and good afternoon.

Before I start the discussion of budding American elm, I should like to comment briefly on the question of compatibility. May I ask the committee which prepares our Proceedings whether it wouldn't be a good idea to have perhaps one sheet in the back of the Proceedings on which experimentally-minded growers might record their experiences with compatibility of understocks? I am thinking that we could set up a simple table in which there would be, for instance, a column for the scion, a column for the understock, and a column for a simple numerical key to indicate the degree of success for the particular graft. As a suggestion, the key might be. A for satisfactory growth; B, grows for a couple of years and then dies, C, grows briefly; and D, no evidence of a successful union. I think such a table might save a lot of experimentally-minded propagators from wasting time and effort and at some future date the information could be consolidated for the use of the members.

I might cite three examples in my own experience during the past five years. One is an attempt I made to bud Paul's Scarlet hawthorn on *Crataegus cordata* understock (Washington thorn), in which we got wonderful growth the first year, but signs of incompatibility the second year. During the third year, the trees reached a height of about five or six feet and died. Two other attempts were concerned with trying to find a better understock for the Japanese maple (*Acer palmatum*). We found that when *A. ginnala* and *A. buergerianum* were used as the understock, the scions grew actively for periods up to a month and then suddenly languished and died.

Mr. Flemer discussed the budding of the American elm. (Applause)

Budding the American Elm

WILLIAM FLEMER III

Princeton Nurseries, Princeton, New Jersey

Propagating American elms would seem, with the diseases which we have around, like propagating American chestnut from seed, but we at Princeton Nurseries haven't viewed it in that way. We have continued to grow elms and we have found that while we don't grow 40,000 or so annually as we used to do, we still grow between three and four thousand

a year. We find that there is again beginning to be a moderate interest in planting American elms.

I think that at least in the East, where we have had Dutch elm disease for a number of years, there are still plenty of elms around. At least in rural areas there are still good reasons for planting the American elm.

A number of years ago when we first started to grow American elms in my grandfather's F and F Nursery in Springfield, it was found that the American elm was one of the most variable of all shade trees. Some seedlings grew up rapidly into tall, graceful trees, while others were slow growing. There was a variation in the susceptibility to insects, such as the aphids which curled the leaves, and a great variability in winter hardiness.

At that time we instituted a program of selecting American elm seedlings from the seedling blocks. Over a number of years we have gradually narrowed the selections down to one type which has been named the "Princeton Elm." It is a rapid growing, large-leaf, selection with rather glossy foliage. In this day and age we still grow some Moline elms and we propagate Christine Buisman by propagating on some kind of understock.

Propagation of our elm understock begins with collecting seed which matures in late May or early June in our section of the country. We sow the seed in three-foot nursery rows. The seed are covered with sand and germination takes place within a week or two. The seedlings are grown for two years in the seedling row and are about pencil size in diameter. They are dug, graded, and planted in eight-foot rows with two feet between plants. Since they grow one season in the field before budding, the understock is three-years old when they are budded.

We undertake to bud the elm seedlings on the 15th day of August, weather permitting, or not later than the 20th. Our bud sticks are selected from young nursery-grown plants and we try to get as large a bud stick as we possibly can. We use only the buds from the middle third of the stick. Buds from the bottom of the stick are too small in relation to the bark and those from the upper third are too large in relation to the shield which must be used.

The buds peel very easily and we use a peeled bud just as in apple budding. We tie them with rubber budding strips. The strips are cut at the end of two weeks by which time union has taken place.

The top of the understock is cut off the following winter in February or sometimes in early March. The bud breaks into rapid growth in the spring. The new shoot is staked immediately with a short supporting stake to prevent it from blowing over until the shoot becomes woody.

We have found one problem. For some reason, rabbits seem to prefer the varietal buds to the naturals which arise from the understock. Possibly this is because of a higher sugar content. We are very careful to keep all rabbits out of the bud block until the new shoots have reached three feet in height. Rabbits do not seem to harm the plants after they have reached this size.

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CHAIRMAN FILLMORE: Thank you very much, Mr. Flemer. You have presented the budding procedure used by the Princeton Nurseries for the American elm in a very interesting manner, and you have also set a good precedent by allowing ample time for questions.

MR. ILGENFRITZ: Will you comment on the relative growth rate of budded American elm compared with seedlings which are cut back and allowed to grow by themselves?

MR. FLEMER: One of the main criteria we used when selecting the strains of American elm which we bud was vigorous growth. One-year buds at the end of a full growing season will average between six and eight feet in height and up to $\frac{3}{4}$ inch in diameter. It is a rare seedling, indeed, that is that tall or that thick. I would say that on the average our budded elms are twice the size of naturals which develop on seedlings on which the bud did not take.

MR. CARL G. WILSON (Thompson Products, Euclid, Ohio). Do you consider Dutch elm disease curable?

MR. FLEMER: I don't think the Dutch elm disease is curable, but I think that as the population of elms is reduced and, therefore the elm bark beetle is also reduced, that the incidence of the beetles and hence the incidence of the disease is bound to be reduced too. I don't think that we should plant long avenues of elms because through root grafts and the presence of a large population there is no question but that Dutch elm disease will occur. I still think, however, that there is plenty of room for individual specimens scattered through-out the community, to grow and thrive despite the prevalence of the disease. Dutch elm disease is not wind carried like the chestnut blight. It has to be carried by the insect and the insect is controllable by spraying. I don't think we should go into a large program of elm planting, but I don't think we should give them up entirely.

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CHAIRMAN FILLMORE: When I wrote Mr. John Siebenthaler concerning speaking at this meeting, he replied that there was some likelihood he could not come because of the large amount of travel involved in his duties as president of the American Association of Nurserymen, but I wonder if Mr. Jack Siebenthaler, The Siebenthaler Co., Dayton, Ohio, will discuss the subject of the propagation of honey locust by summer budding.

MR. JACK SIEBENTHALER: I wasn't expecting this, Dick, but I will be glad to offer what I can. Many of you gentlemen are probably familiar with our practices on the Moraine locust which is what I will discuss.