DR. C. J. ALLEY: Do you have some superior selections of Mahaleb seed trees?

MR. MARTIN HOLMASON: They are all superior that will be coming on now. We have planted about 500 pounds of superior selections. They're fully 100% supposed to be virus-free and they've been all started from layers, not grafted or budded, and they're all superior seeds.

DR. C. J. ALLEY: What I am getting at is in regard to some of the selection work that has been done by the Agricultural Experiment Stations where they have been selecting clones of Mahaleb cherry, say for either large leaf or upright growth. Do you have some better selections of these?

MR. MARTIN HOLMASON: We get all our seed trees from the Prosser Experiment Station in Washington; they are still working on large-leaf and small-leaf Mahalebs. They have come out with a Turkish clone now that is a large-leaf and a very good grower; we think that within the next four or five years that it is going to be the seedling used for Mahaleb altogether.

DR. C. J. ALLEY: Yes, but has work continued, say with these particular liners now, as to the type of top tree they would give; in other words, would there be better production of fruit or would it be a more vigorous type of growth?

MR. MARTIN HOLMASON: Well, we have budded-in — up there in Washington — on both varieties of Mahaleb this last summer, so we can tell you more about that in a year or two from now.

DR. C. J. ALLEY: Do these selections of Turkish-type seed source trees produce better than the ordinary type of Mahalebs?

MR. MARTIN HOLMASON: They produce as well but they are much slower ripening so we don't know how it's going to work out. It takes about three or four weeks longer than the ordinary Mahaleb cherry.

MODERATOR MELOTT: The next speaker is Kent Brooks from Carlton Nursery Company who has been a long time friend and business associate, together with his brother, Lyle, and myself in the Carlton Nursery Company. He has charge of propagation and production and is going to talk on double-budding of pear trees. Mr. Kent Brooks!

DOUBLE-BUDDING OF PEAR TREES

KENT BROOKS
Carlton Nursery Company
Forest Grove, Oregon

Most of you know, of course, there are varieties of pears that are not compatible with quince rootstocks, especially the Bartlett variety. While we have received reports of a Swiss and French selection of Bartlett as being compatible, there has

not been enough work done regarding these selections to propagate them commercially with the confidence that they would continue to grow favorably.

This situation caused us to consider various ways of getting a combination of a compatible variety between the rootstock and pear variety. Knowing that both Buerre Hardy and Old Home were compatible, we made up some grafts consisting of Bartlett grafted on B. Hardy or Old Homes using grafting tape to hold the grafts together. We then put these in moderately warm storage for approximately thirty days to start the callusing action at the graft union. After this thirty-day period, we either put them in cold storage or graft them in the field onto quince rootstocks. We were not entirely sure what growth we would get from this double graft, but it turned out to be very good. We couldn't see any difference between the grafts put in cold storage and those grafted immediately in the field, except the ones put in the field earlier seemed to have a head start over those put in cold storage for a couple of weeks. We questioned if it was necessary to make these grafts up and callus them in storage for the thirty days, so we made up several hundred, grafting them in the field right away. The results from these grafts were equally as good as the others.

After analyzing these various tests, we now make up our grafts with the thought of grafting them in the field as soon as possible. If weather conditions do not permit this, we put them in cold storage, holding them dormant until we can use them.

The budding, or double-budding, as we prefer to call it, is a relatively simple method of using a thin piece of a compatible variety between the Bartlett and the quince understock. We like Old Home for this as it seems to be more vigorous and we like the vigor in this particular place.

The first thing we do in double-budding, is make a regular "T" cut in our rootstock about one and a half inches long; then taking a stick of Old Home and starting at the small or tip-end, we shave off a piece of the bark about one-inch long, which we do not use. This leaves an exposed area of wood; we then go back and make another cut, starting about half an inch beyond the previous cut, cutting this like we normally would a regular bud. Making sure there is an area of bark on the nose of this, we take a sliver of wood about an inch and a half long, this we slip under the bark, pushing it to the bottom of the "T" cut. We then take a regular bud of the Bartlett or whatever variety we are using, cutting it long enough so that it will cover the exposed area of the Old Home put in previously. We use a solid wrap to cover this bud, leaving the eye exposed. We like to leave this wrap on from five to six weeks so the callus can form properly.

A couple of important points I might add, are the vigor of the rootstock, which should be in good, growing condition and the maturity of the budwood, the more mature the better under

these conditions; we usually get a 95% take, or better, in our double-buds.

MODERATOR MELOTT: Are there any questions for Kent?

MR. DAVID A. LAWYER: Is Flemish Beauty pear satisfactory as a stock between Bartlett and quince?

MR. KENT BROOKS: We don't use it. We have used Hardy, but we prefer the Old Home on account of it's vigor. We think it does a better job of making a good compatible union.

MODERATOR MELOTT: The next speaker needs no introduction to this group. He's been around in horticultural circles for years and most of you know him much better than I. Dr. H. B. Tukey from Michigan State is going to talk to us on propagation of clonal apple rootstocks. May I present Dr. Tukey!

THE HISTORICAL BACKGROUND, THE DEVELOPMENT, AND THE PROPAGATION OF CLONAL APPLE ROOTSTOCKS IN AMERICA

H. B. TUKEY, *Professor Emeritus*
Michigan State University
East Lansing, Michigan

I have chosen to speak in general terms. You are fortunate in having horticultural experts in your midst, as well as able nurserymen and orchardists, who can give you detailed information on specific points for this region far better than I can do. But, perhaps looking in from the outside, I can point out the general features of clonal apple rootstocks and where they seem to me to fit.

Let us, then, consider three topics:

1. Why are we interested in clonal apple rootstocks?
2. What clonal apple rootstocks command our major interest and what do we know about these rootstocks?
3. How do we propagate clonal apple rootstocks?

Why Are We Interested In Clonal Apple Roostocks?

The tremendous interest in dwarfing rootstocks comes about because (a) we are historically due for the next step in the refinement of growing fruit, which is to adopt predictable clonal rootstocks to combine with our predictable scion varieties; and (b) we sense the solution to many of the modern problems of the fruit industry by the use of specific rootstocks, such as the East Malling and the Malling-Merton apple rootstocks.

The Historical Background

Centuries ago — in fact, only decades ago in some regions — fruit trees were propagated from seed. No two trees were alike. But we no longer raise our fruit orchards from seed. We have standardized on certain clonal scion varieties as the