

Here in Cleveland I hope you will visit our Garden Center. Most of you know the places of interest and probably all of you have been to places you shouldn't go, so I won't mention those.

As I say, I am not here to take up a lot of time. There isn't too much I can tell you. I am here to learn, so I am very happy to be here again to see all of you. (Applause)

PRESIDENT CHADWICK: Thank you, Besse Howells.

I think most of you are familiar with the fact that Dick Fillmore, of Lake's Shenandoah Nursery, Shenandoah, Iowa, is chairman of the program this year. He has done an excellent job in preparing a fine program, but unfortunately Dick is sick in the hospital and will not be here at this meeting. I am sure that we will miss him greatly.

In the preparation of our program this year we felt that one of the topics that should be discussed was propagation within a small nursery. I think sometimes we tend to think of only the larger operator. We have on the program as the first speaker, Mr. Roscoe A. Fillmore, father of Dick. Mr. Fillmore operates a small nursery in Nova Scotia. He will address us this afternoon on propagation in the small nursery.

Mr. Fillmore presented his paper, entitled "Propagation in the Small Nursery." (Applause)

## PROPAGATION IN THE SMALL NURSERY

ROSCOE A. FILLMORE

*Fillmore's Valley Nursery, Centreville, Nova Scotia*

Mr. Chairman, members of the Plant Propagators Society, and guests: I wondered when I was asked to talk here just why, and after looking over the exhibits in the other room I still wonder. I am afraid there isn't anything I can tell. It is true that I live, and grow nursery stock, in a quite different location and environment from that in which most of you are working.

I may say that I thoroughly endorse the purposes of this great Society and, therefore, I joined last year. I have always believed that each of us had more to gain through cooperation than through fighting each other and attempting to keep our particular methods secret from our neighbors.

Now I don't know just how much you may know about my location - Nova Scotia. If you will look at the map of North America or of Canada you will find that Nova Scotia sticks out into the Atlantic like a bent thumb. It is connected with the mainland of North America by a narrow isthmus, the Isthmus of Shignecto, some 18 or 20 miles wide, so the province is almost an island. We have the Bay of Fundy, famous for its high tides on the north, and the rest of the province is surrounded by the Atlantic Ocean.

Now that Atlantic Ocean is bound to have an enormous influence on our general climate and our temperatures. Our temperatures, for instance, range from a very occasional 90 in July or August, to a very occasional 20 or 25 below zero in January or February.

We have an extremely dry season, as a rule, from the 20th of June until the first of September. This particular year, that dry season extended

until almost the first of October, so that we have certain problems to meet that are perhaps not quite the same as have those propagators who live in California or New Jersey or near Cleveland, or Alabama.

The basic problems, I suppose, are much the same, but whenever we hear or read of a new technique in propagation of plants we know that we shall have to modify it somewhat, sometimes considerably, before we can make a success of it where we are. That type of experimentation, I may say, is a sort of love of mine. I was born with a curiosity, I think, that was immense and sometimes it has driven me into the armed valleys but sometimes into learning things. I believe that curiosity as an activating force, of course, is responsible for most of the things that we of the human family know today, for most of the things we have discovered.

Now, as for propagation of nursery stock, our nursery is comparatively small, only a few acres, but we grow a fairly wide line of plant materials. Most of you grow materials that wouldn't be quite successful with us. They would be borderline plants or in many cases would be too tender to take our winters or springs which are almost worse than the winters.

We grow a fairly wide line of plants. I might mention a matter of 30 or 35 varieties of conifers. We grow azaleas and rhododendrons, the hardier varieties and specie. We grow blueberries, various ericaceous plants, salvia, and so on, and also a wide line of flowering shrubs.

Now as a youngster I was brought up in a nursery. My father grew fruit trees, apple trees mostly. Thirty years ago, I located in Nova Scotia in the center of Annapolis Valley, which at one time was famous for apples. It shipped two to two and a quarter million barrels of apples to Britain. Today, that market is gone and the orchard business is in the doldrums.

I went to Nova Scotia with the idea of locating in the center of a fruit district where I could make my living growing fruit trees, and I soon found that my family could starve to death growing and attempting to sell fruit trees. If during the season there was a really good price for apples, farmers would mortgage their farms to buy trees. If it was a bad season and poor prices, you couldn't give trees away. You ripped them out of the field and burned them.

So in the beginning, as a sideline in order to feed my family, I started to grow a few shrubs, annuals, perennials, and so forth, and within a very few years I found that in so far as fruit trees were concerned, they were out. I didn't want to grow them any more. I had to go into the growing of ornamental plant materials, and I found in Nova Scotia, due to the climate largely, I suppose, but also due to the fact that there were no native nurserymen who were really growing anything, that a very narrow list of shrubs and of ornamental plants in general were being used. Forsythia, mock orange, and a half dozen others pretty well covered the list. I knew that in order to build a decent local nursery business it would be necessary to add to that list. So we went to work with that idea.

When I was a youngster I learned how to graft and bud. I had learned some of the simpler methods of propagation, such as picking up a clump of phlox and tearing it to pieces and planting a half dozen plants instead of one clump, and the same with shrubs. I soon learned that a lot of the shrubs could not be propagated in such manner because they didn't stool out enough and that you had to learn other methods.

So then we learned that we would have to buy lining-out stock. We bought it largely in Holland, although some from Shenandoah, and some from Ontario nurseries, and after making a lot of mistakes, we learned how to grow the greater part of this material we found hardy.

We had to carry out extensive tests that took a lot of time and a number of years in order to learn just what shrubs would be hardy, and in the course of those experiments, if I may call them such, we fell in love, for instance, with rhododendrons and azaleas. I had seen them in Boston and elsewhere and I was convinced by some means or other we could find some varieties that would be hardy. So we bought lining-out sizes, planted them and watched them be killed. We did it again and again, but it became evident that one or two individuals among that lining-out stock was hardier than the rest.

Now bear in mind the buying of liners from Holland where the climate is very much milder than our own, left us in a situation with stock which had been growing in a climate that was no test of hardiness. The climate of Holland is not a test for hardiness if the material that you are going to plant is going to be planted in Nova Scotia or Quebec or northern Ontario. So we bought this material. We planted it. We took as good care of it as we could figure out and we watched it. Some of it did die, but we got the occasional individual that pulled through.

Now we found in the Province of Nova Scotia when we started looking around and making inquiries, a few odd plantings of rhododendron. We found, for instance, *Catawbiense* and a number of the hybrids which were growing to a height of 12 or 14 feet in places. The Public Gardens in Halifax has a quite large planting of *Catawbiense*. I wondered, at the time I found them there, if they were just what was left of a larger planting of perhaps an assorted planting. But I heard afterward that the old Englishman who had established the gardens was convinced when he had experienced a winter or two in Nova Scotia that there might be a chance that the specie could live through our winters but there wasn't a chance for any other variety to do so, so he brought out a hundred or so. The result was that I had evidence there and I also had thoroughly hardy stock plants from which to get materials.

Now my son Richard told me some ten years ago of the possibility of growing rhododendrons from leaf-bud cuttings and we tried it. We hadn't much luck with it because we hadn't installed heating cable, but once we installed the heating cable, we found we had possibilities.

We found a number of varieties would root readily. Our sweat box is a frame running the length of our greenhouse, 12 or 15 inches deep, and covered with sashes.

The first season we got some results. The second season something in the way of a fungus, I suppose, attacked the materials and the greater part of our rhododendron cuttings and of our coniferous cuttings simply died almost overnight. So we took the sashes off and threw them away. We used cotton shading for a time. Today, taking a hint from Mr. Templeton's propagating frame, we use heavy wire bows over that frame and we toss sheets of polyethylene film over it, making a tent of a kind that is by no means airtight. We find we are getting wonderful results from this.

I don't know whether it would be of interest to you to give you an idea of some of the varieties. My memory isn't good, but I can tell you of a

few of the varieties we root in this propagating case. We root *Catawbiense*, the specie, *Roseum elegans* and *Alba elegans*, and Cunningham's white and Dr. Dresselhuys. Recently we have rooted a few of the Queen Mary and Princess Mary, but we are not quite certain as to the hardiness of those two varieties.

Now we have found some 40 hybrids that are hardy in Nova Scotia. We have confined ourselves to some 20, because we don't want to clutter our lists up with too many varieties because the more varieties you have of any particular plant the more danger there is of getting into a mix-up.

As a matter of fact, the greater part of our rhododendrons are sold on the basis of color. The customer doesn't care a darn what the variety is. He comes in and says, "I want a red one or a pink one or a white one," and that is what he gets, or I hope that is what he gets.

Oh, yes, there is another matter that I would like to tell you of. About ten years ago, in Boston I saw a little rhododendron, a small-leafed, small-flowered pink rhododendron, a *Carolinianum*. I bought some. I thought they were beautiful. I took some home and the winter killed them. So then I bought some seedlings, and I obtained some seeds from the Arnold Arboretum. Five years ago we had some of these seedlings flower and for them to flower in Nova Scotia means they are hardy. If anything is killed, the flower buds are going to be killed. We immediately saved the seed, planted them, and last year, the spring of '54, we had quite a nice lot of *R. Carolinianum* flower. We figure that we have a Nova Scotia-hardy selection.

This is the method by which we have discovered hardy strains of various plants, and I could go on for sometime and list for you the things that we have done in this line.

As a matter of fact, we have done more of this sort of work than we could afford to, because up to within the last three or four years our Canadian Federal Experimental Station was interested in poultry, beef cattle and apples. They paid very little attention to ornamental horticulture, so we have done the work they should have been doing. Within the past three or four years by putting pressure on the experiment farm, they have become interested in ornamental materials. I expect to drop some of this experimentation I have been carrying on and allow them to do it. That is the job they should be doing.

We also became interested in holly and some four or five years ago my son Richard, sent me 200 seedlings of *Ilex opaca*. Also he sent me *Ilex convexa*. Those 200 seedlings of *I. opaca* have now taken three winters outdoors in Nova Scotia and they have been reduced to about 40 plants. The rest of them made such a poor showing and looked so bad that I ripped them out and threw them away. There are still some among the 40 that are straggly miserable-looking plants and don't look as though they will make nice compact plants. Those will be thrown away, but we will have 25 or 30 plants of the original lot that apparently can take our Nova Scotia climate in stride. We have found that tip cuttings of those if taken in November or December will root very readily in our propagating case. We expect before too long to have a stock of *Ilex opaca* to offer to the public. It is possible it may be necessary to put them in sheltered spots in order to be sure they will winter well, but lots of people are good enough gardeners and enthusiastic enough gardeners to take the little extra trouble that is necessary in order to bring them through..

We have carried on this sort of work with dozens and dozens of varieties until we have either proven they couldn't be grown or selected hardy strains that we could propagate and safely sell to our customers.

Our market is in what is known as the Maritime Provinces, that is, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland. It is all pretty tough climate, although not quite so tough as some of you believe. Newfoundland looks to be far north, but anything that grows in Nova Scotia and a few things that will not grow in Nova Scotia will grow in Newfoundland. It is way out in the Atlantic and the Atlantic exerts an enormous influence, holding the temperature up in winter and down in summer, so the climate is far more livable than you would have any idea.

We had the same experience with azaleas. Nova Scotia has an acid soil throughout. Blueberries and that type of thing grow perfectly. Richard sent me, and at times when I visited him I took home, cuttings of various varieties of so-called hardy azaleas and worked with them several seasons. We found that most of them were rather hopeless in our climate. We found that early in the fall the first hard frost would split them right down the stem. So then we started them in the sheds and at the present time we are growing and have a considerable stock, for instance, of *arborescens*, which we find is perfectly hardy. We have known it to flower as early as April 20. That means something in Nova Scotia. There is a point that where we are located on the north central shore of Nova Scotia, we are at least two weeks and sometimes three weeks later than at Boston or at Niagara Peninsula of Ontario.

Dates mean so little when you are attempting to cover a territory as large as is represented here today, that I am not even attempting to use dates to any extent. They wouldn't mean a thing to you because you find your springs two or three or five weeks earlier than ours.

We use as a propagating medium mostly a sharp sand. I have grumbled every year for years that our sand is a little too fine, but there doesn't appear to be an easy source for getting any other. We also use vermiculite. We have found rhododendron roots very readily in vermiculite. I dislike vermiculite because you will pour four or five inches into a propagating bench and three or four weeks later you will find it has settled to three or four inches and the base of the cuttings are too close to the heating cable.

Magnolias are an old story to most of you and I presume the further south you live the easier it is to grow magnolias, but we have tried for a number of years by bringing in small liners, but we have found they grow too slowly or are nipped back by the frost.

Recently I saw a *Magnolia soulangeana* about five miles from my nursery which was about 15 feet high with a spread of 8 to 10 feet. It was in full bloom. I immediately asked the people who owned it for permission to make cuttings when the time was right and since then I have been able to root *Magnolia soulangeana* from a thoroughly hardy specimen. We know it is hardy because it couldn't have been there for less than 15 years and perhaps as long as 20 or 25 years.

Last fall I was amazed when I was in the City of Moncton, New Brunswick, which is almost 100 miles farther north than we are, to find a larger magnolia than the one just described. The man who owned it told me he thought hundreds had been planted and sold in Moncton and that this specimen was the sole survivor.

You can see what I am driving at. We are using, as a matter of fact, our climate to select hardy strains and hardy plants for use.

With conifers, we are lucky in a sense to be within five miles of a federal experimental station. It was landscaped about 40 or 45 years ago with various varieties of juniper, *chamaecyparis*, *arbor vitae*, and *taxus*. We have always had permission to use whatever we could use in the way of propagating material from these plantings. So we have specimens of evergreens that have proven over the years to be thoroughly hardy in our Nova Scotia climate.

Most of us are so situated that we have neighbors. You have nursery-men who are carrying on this work under practically the same conditions of climate as you, while we have been up there practically alone. As a matter of fact, in the Maritime Provinces we have a larger nursery and grow more nursery stock than all the other nurseries combined and we have been pioneering in this line. Even the newer methods of propagation that we read about, as I said before, have to be adapted before we can be at all certain that they will give us the result they give you.

You will be surprised to know that I have *Metasequoia* growing in Nova Scotia. True they winter kill a matter of three or four inches, but they are growing. Of course, mine are only five feet high, whereas, trees that were planted at the same time in the Arnold Arboretum are probably twelve. I believe if the quantity of seed were available, it might be quite possible to select a hardy strain of *Metasequoia* that would grow well in Nova Scotia. That is an objective I have in view, as a matter of fact.

We have learned not to waste propagating material. When you are beginning, as some of you undoubtedly are, you often find it difficult to multiply plants as fast as you would like. You may not, for instance, have anybody to consult with and unfortunately the books are so academic that you don't just understand what is meant. You will find that you must take advantage of every opportunity to get hold of propagating material even if it is only a handful.

Now we have bought, at various times in the past, climbing roses from Holland and they come in with 7- to 10-foot canes. They come in March and we have cut the canes and rooted a fair proportion of them several seasons. We did it and even though we lost a high proportion we were getting stock.

Last spring, we brought in from Holland a shipment of tall *taxus - betzi*. They were tall, beautiful plants. I went to work on them with a pair of clippers and I made several thousand cuttings, six to nine inches long, and stuck them in our propagating case on the second day of April. Late in June I took 60 per cent rooted out. The rest were put back and about half the remainder rooted. We threw the balance out, though they were still alive. We take advantage of every opportunity.

I didn't know when I gave up the idea of growing apple trees and learned how to go about the propagation of shrubs. When I was 17 years old I worked in Rochester, New York, at the old Brown Brothers Nursery, and one spring I had helped to plant hardwood cuttings. So I started to make some hardwood cuttings of shrubs and found they did very well. It was only a few years ago, but we were handicapped by the fact that it was very difficult to line those out in the field and make them root. We found in order to get a decent proportion we had to put them in our shaded frames. That was due, I presume,

to our very low rainfall during the latter part of June and throughout July and August. They would just dry out and you didn't get any growth.

Only a few years ago we learned to make the softwood cuttings. Our first method of handling those was to make the cutting by tearing the twig off the plant, nipping the little heel of bark, treating with the hormones and sticking in flats of sharp sand inside the heavily shaded greenhouse. When we first started that, it was quite a common thing to find that the flats prepared at night were wilted the next morning. We hadn't any knowledge as to the stage of maturity required in order to root readily and, of course, we found some of the shrubs much more difficult than others. But that became our standard method of propagating a great many of these shrubs. We learned in time to tell from the feel of the wood whether it is mature enough. We always have had trouble with *Hydrangea P. G.* wilting for instance.

Last year, when I heard Leslie Hancock tell of his method of rooting leafy cuttings I thought that was a marvelous advance in propagation. It proved to be so with us this past season. Now remember, I have pointed out that we cannot make our cuttings as early as he does. It was about July 26 when we first started to stick leafy cuttings according to Hancock's method. Leslie Hancock's is a tobacco sand; ours is a little different though it is a sandy loam. We added 1-1/2 inches of sand on the soil before sticking the cuttings. We found that cuttings of the flowering shrubs rooted in from 12 to 19 days. Practically everything was rooted at the end of 19 days. After we had stuck a good many thousand in this way, we decided we would put some right into the soil the way Leslie does. There was no significant difference in rooting, so that from now on we will stick them in the soil.

I would like to go back a moment to *Hydrangea P. G.* which we have found a funny thing to handle. Under greenhouse conditions as we first propagated that shrub, we found there was such a great difference that perhaps the cuttings made today would all wilt and those made two days hence would root almost 100%. We tried hydrangea in the Hancock frame. We found they flagged badly the first two days, then they picked up and rooted practically 100%. When we put them into the constant mist frame, we found the same thing happened but that they perked up. We found that Hormodin No. 3 was altogether too strong.

For next year we have in mind a modification of the Hancock method that we believe will be practical and will save a lot of worry and the possibility that some day someone will forget to turn the hose on for a few minutes and let the cuttings dry out. We intend to set up sprinklers with a timing device so every three-quarters of an hour or every hour the burlap covers will be moistened without our personal attention. It may not save a great deal of time, but it may save us a few gray hairs just wondering and worrying.

Now another of the ericaceous plants that we grow to a great extent is the high bush blueberries. Some of you perhaps are familiar with them. We grow them as a fruiting proposition, that is, to sell to people who want to put some in their family garden or to plant commercially. Believe it or not, it is a beautiful ornamental shrub in flower, in fruit and in autumn color. These are grown mostly from hardwood cuttings by just a little different method from that used in growing the flowering shrubs from hardwood cuttings.

The cuttings are taken in the spring, usually in March when the fruiting bushes are being trimmed. The cuttings are about four inches long. Boxes, six or seven inches deep, are prepared with quarter inch wire mesh bottom and the boxes are filled with peat moss and either set over a pit or set just across the sides of a frame. The cuttings are stuck with just the tips showing. In the course of the summer they will root. You can pick up these boxes and carry them into the storage basement or storage room or put them flat on the ground and mulch them. They are planted out in the field the next spring.

I have tried, mind you, to root blueberries from green cuttings with rather poor results. We did root a small percentage in mist. We rooted a small percentage in the Hancock frame. Thinking we had something, we made a bunch in July and I think that it was just wasted time. Before I left home we made several hundred hardwood cuttings by trimming the fruiting bushes and we put them into our inside propagating case over the heating cable. We hope to root them during this winter so that if they root well enough to be lined up next spring we will have saved a part of a season.

I understand that mist is to be the subject of one of our discussions, so I am just going to mention the fact that we put in a little frame 3 x 12 feet and we tried a little bit of pretty nearly everything in that frame. I think that some of these materials that are otherwise pretty difficult to root will root under mist, but on the whole, I would trump for the Hancock method for most things. We stuck cuttings of some five or six varieties of *Philadelphus*, including *grandiflora*, *varginalis corinarius*, and *lemoine*, and others, and we found that the foliage broke down in the mist frame. Within two weeks the cuttings were practically denuded.

Now I thought it was a failure, but we found that almost all of them had rooted but the result was there was no growth. If you pull one out of the frame you find a little sprout starting from the lower node, the same node from which the roots came. I want to know whether I used too much water, since it appeared to me that the leaf itself just broke down into a jelly-like substance.

We are quite certain that the mist frame is going to be a boon in the rooting of coniferous evergreens. We did try some things that didn't root, for instance, we made cuttings of Koster's spruce of the current year's growth but they did not root.

Now "hetzi" taxus rooted practically 100 per cent. They were rooted by the third of July. *Chamaecyparis pisifera*, an item which we have found extremely difficult to root, rooted beautifully and believe you me, we will have a lot of them next year because I believe that is the only practical way of rooting them. We don't intend to concentrate on either the Hancock frame or the mist frame. We intend to root all the fairly easy stuff in the Hancock frame and to set up a mist frame large enough next year to handle the more difficult items.

By the way, we tried azalea cuttings taken from fairly soft and tip cuttings of *Rhododendron catawbiense*. I believe the reason they didn't root was that they simply didn't have the time. We have a short season.

Our business probably differs considerably from that of most of you here. For instance, as I explained when I found my family could starve growing fruit trees, I had to start another line, so I built up a big business in annual



plants and perennials. Today, we have in the field 185,000 pansy plants for next spring. Next spring we will grow a quarter million annual plants.

A third to a half of our business is in our own yard. We find that these lines bring people by the thousands. We have had 3,000 people over a week-end on our place. Now, to a considerable extent it is that bright field of pansies that brings them in.

You might be interested - I don't know - in knowing how we handle pansies, for instance. This is the method briefly: The last week in July and first week in August we prepare frames 6 x 40 feet. We put the soil through a screen. We use well-rotted manure and peat moss, so that probably the final 4 or 5 inches of that frame is 25 per cent peat, 25 per cent manure and 50 per cent soil, perhaps not quite so strong as that in manure.

We seed on the surface and immediately cover with sashes and cover that with tarpaper so the frame is warm and tight and dark. At the end of about five days, germination is under way. We examine it and we toss a little soil here and there to cover the sprouts of the newly-planted seed and we gradually remove the covers and shading and in three weeks' time the frames are bare. In six weeks they are ready to transplant and we run them into 4-foot beds, eight rows to a bed. The plants should be about five inches each way, and they winter beautifully under a light covering of coarse hay. That is the operation in brief.

Now another item we grow by tens of thousands is double flowering petunia. We grow them from cuttings. We buy seed normally when a new variety is advertised and just enough seed to get a few plants. About the first of September when the petunias are growing well we make cuttings and root them and they become the stock plants from which we grow our marketable stock towards spring.

We have rather restricted greenhouse space and it became a problem a few years ago to handle all these bedding plants. We found we were increasingly compelled to use our greenhouse space for the propagation of nursery stock. That was really the important thing, we believed, so we built ourselves fairly tight frames six feet wide and about 40 feet long. Since we have such a changeable climate in the spring, we suspend 100-watt frosted lamps about 6 or 8 feet apart. We use that not only to prevent freezing but during a cold day in April when it is snowing and too cold for anything to grow, almost too cold for a person to step out of doors, we switch on the lights. We get fine growth, so I take it for granted that the light is helping to give us strong plants.

One of the things we have made a complete failure of is roses. I have made up my mind since trying constant mist that we can root florabunda and polianthus and grow fine plants on their own roots. The hybrid teas are a horse of a different color. I don't know what to do with them. We have budded them for several years. We find they start in the fall and that the winter kills them. This year, we have grown a quantity of multiflora seedlings. We are going to try again and bud well down on the root and see if it makes any difference.

Now I suppose you are all just as well aware as I am of the fact that every species and almost every variety of plant is fussy as blazes, probably as temperamental as you and I, and it is an endless problem to discover just

the particular conditions under which this or that or the other will root or thrive.

Now we have run up against scores of situations where we scarcely knew what to do. The past few years I have to admit I have had the advantage of a son who has made somewhat of a study of this problem and has been able to give me a lot of this information. Even he, as a matter of fact none of us, knows the half of it. I suppose I felt when I came here that the main excuse for coming here and attempting to talk to an audience of seasoned nurserymen and propagators was the sum total of the experience of all of us constitutes all that is known on this subject. Our experience, our mistakes and our successes will add a little bit to human knowledge in this business of plant propagation and that really was my justification for coming here and attempting to talk to you today, because really our objective has always been to produce everything we sold from scratch, from seed, grafts, layers, divisions, and cuttings. That has been our objective and we have almost reached it.

Our nursery and lath houses contain tens of thousands of materials to go into the field next spring. It will mean, when mature and ready to sell, that we will have four or five times as much material as we have ever had in the past to sell. So I suppose a man could scarcely have gone through such an experience as this, covering a lifetime, without at least learning something and perhaps being able to help, at least in some particulars, even the biggest of you.

Ladies and gentlemen, I thank you for listening to me for so long. I hope I have contributed something. I trust that if any of you are in Nova Scotia at any time that you will call on me. We live just three and a half miles north of the town of Tenbrook in the Annapolis Valley.

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PRESIDENT CHADWICK: Thank you, Mr. Fillmore, for a very interesting discussion. I think we will take time for one or two questions. We want to keep on schedule as much as possible.

MR. HOOGENDOORN (Hoogendoorn Nurseries, Newport, R. I.): What interested me was the large hydrangeas you found 100 miles from home. Did you observe the elevation of those trees?

MR. FILLMORE: I wouldn't know the precise elevation. I would say neither of them would be more than 100 feet from the sea level.

MR. HOOGENDOORN: In rose budding, you budded hybrid teas and they died?

MR. FILLMORE: No, they start in the fall and the winter kills them, even though they are well covered.

MR. LESLIE HANCOCK (Woodland Nurseries, Cooksville, Ontario): I think what you said about the mist frame and evergreen production is quite significant. Were *Hetzi* cuttings of new wood or some old wood?

MR. FILLMORE: They would be last year's wood, that is, they were cut so actually there were two years, last year's and the early growth.

MR. HANCOCK: I would like some corroboration on that point. We have always understood in evergreen cuttings which were immature, they

did not root well. Would it not have been better than making them in July to have made them in May?

MR. FILLMORE: That is quite possible. I can't say I know, really. That is quite possible. You see the April second cuttings rooted fine, too, and of course, they would only have last year's growth.

PRESIDENT CHADWICK: I am going to ask you to hold the rest of your questions until the Friday evening session when we will have a discussion period.

You will recall last year we started an exhibitor speaker session at these meetings, and that appeared to be very successful. Consequently, we decided to continue that arrangement this year. Some of you may have had an opportunity to see some of the exhibits which are in the lounge room at the other end of the hall. If you have not, be sure that you do see them before you leave here. The man responsible for these exhibits and the panel symposium is Mr. Roger G. Coggeshall of the Arnold Arboretum. I would like to introduce him at this time and he will carry on the afternoon session.

Mr. Roger G. Coggeshall took the chair.

MODERATOR COGGESHALL: Thank you very much, Dr. Chadwick.

It certainly has been a pleasure for me to correspond during the past two months with the large number of persons who have contributed material for the exhibits.

Today, we are going to have seven speaker-exhibitors. In addition to these seven speakers, there are some ten other persons who have set up exhibits for this meeting. Any questions concerning these exhibits should be asked directly of these people who have them set up, as they will not speak from the platform today.

As you can see by your program, there will be four talks this afternoon and three tonight.

In general, we are allowing two minutes for an introduction, 15 to 20 minutes for the actual talk and approximately nine or ten minutes for a question period.

The first speaker of the afternoon is Mr. William Flemer III, Princeton Nurseries, Princeton, New Jersey. Mr. Flemer will speak to us on the "Propagation of *Mahonia aquifolium* from Softwood Cuttings".

## PROPAGATION OF MAHONIA AQUIFOLIUM FROM SOFTWOOD CUTTINGS

WILLIAM FLEMER III  
*Princeton Nurseries, Princeton, New Jersey*

Ladies and gentlemen, fellow propagators: You may wonder why I have chosen the subject of "*Mahonia aquifolium* From Softwood Cuttings", because as is generally known, *Mahonia* grows very well from seed, almost as well as barbery. You simply level off a piece of land, break up the soil, spread the seed in a suitable manner, cover with sand and wait until spring, when up they will come by the thousands.