quite spectacular. We have about 35 clones of these deciduous azaleas and should have them available next year.

Another plant I would like to show you is a new magnolia from England called 'Leonard Messel'. It is a hybrid of *Magnolia stellata* and the flowers are really quite pink. I am propagating it and should have it available this spring.

Finally, I have a new rhododendron sent to us from Canada. It is a cross between 'America' and 'Dr. Ross'. It doesn't have a name but we are currently calling it "Ameross", just to have a name to put on the label. It roots very easily and grows vigorously. It buds heavily at the two-year stage but as yet we don't know how hardy it is.

Friday Evening, December 6, 1974

QUESTION BOX

The Friday evening session convened at 8 p.m. with Mr. Jim Wells, Mr. Edward Bunker, and Mr. Richard Martyr serving as moderators.

MODERATOR WELLS: We have a large number of questions to go through this evening and, in addition, some people have requested time to show some slides. We will begin this evening's program with a few general questions. Dr. Elton Smith, in your paper, was the fertilizer applied broadcast or band-placed?

DR. SMITH: The work I reported at these meetings was a broadcast application, but we have done it both ways.

BEN DAVIS: Dr. Smith, from your paper I understood that you're recommending only 3 lb. N/yr, but for shrubs you're going to 5 to 7 lb. N/yr. Why the lower rate for trees?

DR. SMITH: This is somewhat difficult to answer. At the higher rates, we had taller trees with darker green foliage and other "plus factors" but what really counts is caliper. The 3 lb. rate is based on caliper but I believe there is more to this than just caliper and we may have to look at some of these other factors in later studies.

MODERATOR WELLS: Dr. Noel Jackson, in regard to resistant pathogens — will alternating fungicides prevent or delay resistance build-up?

DR. JACKSON: Yes, this is the only way we presently have of avoiding the build-up of resistant pathogens and this is the recommendation which we're following.

MODERATOR WELLS: Case Hoogendoorn — dwarf *Viburnum carlesii* can be rooted but it is difficult to get it through the first transplanting and it's first year. Will you comment, please?

CASE HOOGENDOORN: There is no difficulty; like everything else if you do things on time you have no problem. No nurseryman does anything on time; he's always too busy so he gets things done too late and then he has a problem. If you take cuttings of *V. carlesii* 'Compacta' in June, they'll root but if you wait and take them in the fall, they'll be dormant and they won't break in the spring. Stick them in flats and don't disturb them, take them out of the greenhouse and store them in a coldframe. In the spring you give them a little heat and they'll all break beautifully, each and every one of them. But we graft them. Do you know why? Because we don't have time in June, we're too busy planting and doing other jobs in the nursery.

MODERATOR WELLS: Dr. Gardener, have other hardwood barks proved toxic to ornamentals in addition to silver maple and, if so, bark of which trees?

DR. GARDENER: Yes, ash and black walnut have; but in the case of black walnut, it gave us our greatest growth stimulation after being composted for 30 days. Red oak showed some toxicity but sycamore and cottonwood had the least — and that is why we chose it for Dr. Still's work.

MODERATOR WELLS: Carl Orndorff, would you outline your method of propagating Bradford pear as to medium, hormone, etc.?

CARL ORNDORFF: Take cuttings in the early part of June and root them inside the greenhouse in the coarsest perlite available. We take terminal cuttings about 6 to 8 inches long using pruning shears. We treat the cuttings with 0.8% IBA powder, place them under mist and get about 90% rooting.

MODERATOR WELL: At what temperature did Dr. Gouin overwinter the azaleas fed with Osmocote?

DR. GOUIN: They were carried in 50°F house which probably dropped occasionally to 45°F.

MODERATOR WELLS: Francis Gouin has a series of slides which he would like to show us on some work he has been doing.

(Editors Note: Dr. Gouin showed slides of nursery crops being grown with waste products as the major source of nutrients. Work is in progress using sewage sludge, leaves collected from municipal streets, wood chips and ground tobacco stems. This work is being continued and more complete results will be available in the future.)

MODERATOR WELLS: Mr. Orndorff, I see from your list that you root hemlocks from cuttings; could you explain how and when this is done?

CARL ORNDORFF: These are some compact selections that we've made from our own seed crop. We take the cuttings in De-

cember and treat them with 0.8% IBA and stick them in perlite; they root in about 8 to 10 weeks, as I recall.

MODERATOR WELLS: There is no question that there is a wide variation in the rootability of individual plants in a species and if you are persistant and check these plants you will find one that will root. A second comment I would make here, is that 1% 2, 4, 5 - TP has rooted these hemlocks quite well.

CARL ORNDORFF: I have one plant at my home which is about 20 ft tall and roots 100% but others I have there will hardly give 60% rooting.

MODERATOR WELLS: What is the procedure for propagating bottlebrush buckeye by root cuttings?

JOE McDANIEL: I had very limited experience with this but I took root cuttings in February and March and placed them in the greenhouse in vermiculite. I can't give you an actual percentage, but I believe it was around 50 to 60% rooting.

JOERG LEISS: We dig our plants in the fall and take short root cuttings about 3/16 inch in diameter by 3 inches long and these we stick in pots, leaving about a 1/4 inch exposed. Most of them will sprout in the greenhouse and then we take cuttings; they will root readily from these cuttings.

MODERATOR WELLS: Has anyone had any success in propagating *Acer griseum* from cuttings and growing them on?

PETER VERMEULEN: We rooted some cuttings which were taken the last week of May and first week of June; these were taken from container-grown seedlings. They were treated with a Germain type hormone mix which contains equal parts 4 X Cutt-start and 4% IBA with 1/16 part Phygon. These were stuck in our Propicon mix which contains peat moss, perlite, sand and 12½% soil and placed under mist. We attained about 80% rooting but this was only a small batch of about 60 cuttings.

CASE HOOGENDOORN: I bought 500 seedlings so that I would have juvenile plants. We took cuttings 6 to 8 inches long in the latter part of June, treated them with Hormodin No. 3 and put them in flats under mist; we got 80 to 85% rooting. This past summer, we took 5,000 cuttings but we didn't get them at the proper time and we got only 1500 to root, so here is this problem of doing things at the proper time again.

MODERATOR WELLS: Mr. Ed Bunker has some slides which he wishes to show us concerning phytophthora in Australia.

(Editor's Note: Mr. Bunker showed slides of phytophthora damage encountered in his country and some of the control procedures currently being used. Phytophthora is one of the more serious disease problems in Australia).

MODERATOR WELLS: What is the best way to propagate *Pachysandra procumbens*?

VOICE: Divide it.

MODERATOR WELLS: How do you germinate ginseng seed?

ANDY LEISER: This can be found in Bailey's old Nursery Manual published in 1910; I don't recall the details offhand.

MODERATOR WELLS: How can I root cuttings of *Enkianthus cernuus* 'Rubens'?

CASE HOOGENDOORN: We used to root *Enkianthus* from softwood cuttings taken in June.

MODERATOR WELLS: What is a good method of propagating 'Royal Purple' Smoketree?

VOICE: Root cuttings.

CASE HOOGENDOORN: In Holland, they could root these but then they couldn't move them, they had to leave them where they were. They would eventually break and then you could plant them out. This is a lot of hassle and I don't like hassle so we graft them.

ARIE RADDER: We take cuttings of the soft growth in May and stick them in outdoors mist beds in sand with a little perlite added. The important thing is to pot them up as soon as they are rooted because once they are rooted they rot very readily.

RALPH SHUGERT: In southern Ohio, we take soft cuttings in early June, stick them in straight sand under mist and leave them. Cover the whole house with poly over the winter, lift them in May and take them right to the field for planting.

MODERATOR WELLS: At this time, I want to show a series of slides showing how we are rooting rhododendrons directly in pots in a plastic greenhouse. We made about 30,000 cuttings about the second and third week of July and stuck these into 4 inch square plastic pots. After sticking, we turn on the mist and walk away. We get about 98% rooting on the easy ones and about 90% on 'Nova Zembla'. Our overall rooting was 85% this year which included a few cultivars that respond to this treatment.

We will now look at some slides Ed Bunker has brought with him.

(Editor's Note: Mr. Bunker showed slides of *Grevillia* and of the growth of a clone 'Gawdi Chawdi' on *G. robusta*. Slides of a shade structure which will withstand high winds common to parts of Australia were also shown. The structure has withstood winds up to 100 mph).

RICHARD MARTYR then showed slides of a potting machine used in England. The machine fills poly bags with soil for the growing of nursery plants. This is being done to overcome the

high cost of clay pots and plastic nursery cans. The machine can handle several sizes of poly bags. There are some problems associated with handling the plants in the thin poly bags but the process is working out very well in England.

DR. BHELLA showed slides of some work he has been doing concerning the rooting of Douglas fir. Because of scion and stock incompatibilities, 50 to as many as 80% of the grafts of Douglas fir may die. Studies of the greenhouse temperature, hormone, removal of the dormant bud, and daylength were undertaken to improve the rooting of cuttings. A hormone treatment consisting of 5% IBA and 5% NAA in 95% ethanol gave the best rooting. Removal of the dormant bud had no effect on rooting. Long days consisting of 18 hr of 700 ft-c were much better than short days of 9 hr of 1500 ft-c. The long days stimulated cambium activity and gave improved rooting since the root initials were found to originate from the cambium. Juvenile cuttings taken in January or February and stuck in a 5:1 v/v sand and peatmoss under mist will root 80 to 90% in about 90 days.

MODERATOR WELLS: Is anyone using a light intensity mist controller?

DR. JAYNES: Several of the nurseries in Connecticut are using them. Basically, they are a unit which receives and counts light units and activates the control unit after a pre-set number of counts have been recorded. I have often wondered why more nurseries do not use them because they have so many advantages, particularly over timeclocks. You do not even have to compensate for cloudy days, rainy days, or even the shorter days of fall because the system is activated by the amount of incoming light.

VOICE: Where can they be obtained?

DR. JAYNES: I know of only one unit, Solatrol, which is available from General Scientific, Sherman Avenue, Camden, Connecticut. They retail for about $140.

MODERATOR WELLS: Someone would like to hear comments on setting up a mist system in a closed plastic house where the temperature and humidity are very high on sunny summer days as compared to a mist system in the open with just a wind break around it. The slides I showed a moment ago illustrates our plastic house with the ends open and we do very well with this method for propagating rhododendrons.

PETER VERMEULEN: We started with the open mistbeds but have gradually changed over to the closed house system. We were having some heavy rainfalls during July and August which caused excess water in the mistbeds. This caused a lot of defoliation of our softwoods and so we decided to put an umbrella frame over the mist beds to keep the rain off. Once we had the umbrella up,

we decided to close in the sides. We've had much better results with the closed house than we did with the open type.

CHARLIE PARKERSON: We found that cuttings in a closed house will only take a temperature of 110°F, so if you close up the house you had better have a way of ventilating it if the temperatures get up too high. What temperatures do you have inside your house?

MODERATOR WELLS: About 95° to 100°F, but we have a heavy fog in there, the system is on 12 sec every 3 min.

DAVE BAAKER: I believe it is the medium temperature which is most important. The temperatures in our houses will get up to 110 to 120° but when the medium temperature reaches 75° to 80°F, that's when the cuttings begin to suffer.

MODERATOR WELLS: Can a fine textured gravel be applied to seed beds outside as a mulch to help prevent desiccation and fungal problems encountered with other types of mulches?

RALPH SHUGERT: This can be done if you do not exceed ¼ inch and use gravel of a moderate size. If the gravel particles are too large some of the small-seeded materials may be injured in trying to push up through it.

MODERATOR WELLS: We have had a number of questions this evening which have been answered with comments to the effect that this information is available in some of our past Proceedings. And as Peter Vermeulen has indicated, there is now an Index to the Proceedings which can help you locate articles which deal with the propagation of specific items. For some of our newer members, I would say that all of our past Proceedings, with the exception of, I believe, two are available from the International Secretary, Dr. William Snyder.

This is the end of the Question Box period and I want to thank Dick Martyr and Ed Bunker for their part in it.