

couraging results that have been obtained. And third, the amount of time required to operate such a unit is small.

Thank you, and if there are any questions I will do my best to answer them.

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MR. MARTIN VAN HOF: You said the cuttings were soft. Were they also thin?

MR. COGGESHALL: Yes, they were thin.

MR. VAN HOF: Why is it we have failed with soft, thin cuttings which were taken in August during the third flush of growth? They were treated with hormones, but all died.

MR. COGGESHALL: I think the reason is the difference in humidity. I have tried to root them in an open case and in a regular cutting case with a sash over them. In the polyethylene plastic case, the humidity is held so high that the cuttings don't get a chance to wilt.

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CHAIRMAN FILLMORE: We shall now have a discussion of the propagation of *Ilex cornuta Burfordi* as practiced by the Verhalen Nursery Company, Scottsville, Texas, and presented by Mr. John B. Roller. Mr. Roller is making his second appearance at our meeting. We certainly welcome him and we are glad to have members who will come so far to attend the meetings, especially when they have a contribution such as Mr. Roller will now present to us.

Mr. Roller presented his paper, entitled: Propagation of *Ilex cornuta Burfordi*. (Applause)

## **Propagation of *Ilex cornuta Burfordi***

JOHN B. ROLLER

*Verhalen Nursery Co., Scottsville, Texas*

Our cuttings are taken from stock plantings that are to be grown for a period of five years, or from plants in containers. Our container plants, of course, are sold after one growing season so we use only cuttings from young vigorous stock. We have found that young plants give us faster rooting with higher percentage striking roots.

As to timing, our cuttings are taken after each period of growth has hardened without regard to calendar dates. The best time to take them varies from a few days to weeks. We normally get two periods of growth on holly but in good seasons we can expect three. If we have an early spring our first cutting comes in June followed by cuttings in August and October. With a late spring we usually cut about July and September.

The type of cutting taken is as hard as can be had on early cuttings

as we have been most successful taking them just as the terminal buds begin to swell just before they break into active growth. No particular attention is paid to position of cuttings on the mother plants. We like a sloping cut beginning just opposite a node. Length of cuttings should be four to five inches but they seem to root along the stem readily. We like to leave two or three whole leaves on the cutting, preferably three.

**MEDIA:** This may be surprising to some of you but the media we use is just sandy field soil. When the soil is first placed in the beds, peat moss is spaded in at the rate of one medium sized bale to approximately 160 square feet and then one bale after each crop is removed. Soil is never changed and some has been used for years without sterilization. However, we are fumigating with methyl bromide as we have opportunity, to kill weed seed. Fungus has been of no consequence. It has only been since we have been using plastic sheeting that it has appeared.

Our cuttings are treated with a solution of one gram indole butyric acid, three grams naphthalene acetic dissolved in two hundred cc isopropyl alcohol. This is our base solution and we use 5 cc of this to one quart of water and with this we mix a thin mud solution of sticky red clay and as the cuttings are made they are dipped in this mud to a depth of 1½ to 2 inches. Mud should be right consistency to give a good coating and not run off or wash off easily. Our purpose in treating our cuttings by this method is this: it prevents drying out of the cuttings and makes it easier to store them for a few days if necessary.

**CULTURE:** Our propagating structure is a shade construction or lath house. Beds are built on the ground. We just rake a bed level, and firm it down, being sure that plenty of moisture is present and then cuttings are stuck in rows about three inches apart and one-half inch in the row. The dirt is packed down around them, they are thoroughly watered down, then a covering of plastic sheeting is laid over a wire framework made of No. 10 gauge concrete reinforcing wire cut in 5½ foot lengths, each end stuck inside the four foot bed, forming an arch. Dirt is shoveled on the edges of the plastic sheeting which is wide enough to lap about 8 inches on either side. This makes a bed that is practically air tight. Next, additional shade is suspended above the bed completing the job. If bed is properly watered and shaded in the beginning, no further watering is necessary for about three weeks. By this time the cuttings are rooted. Callus formation begins very quickly and is visible after four or five days. First roots can be expected in about sixteen to eighteen days with most rooted at 28 days at which time some of them will be coming into growth. No ventilation is given, except during watering, *if* watering is necessary.

Our practice is to remove shade and plastic sheeting and cover with sash covered with screen cloth, watering as needed. We usually pot them out of the cutting bed about eight weeks from the time they were made. The first spring cuttings are then heavy enough for fall planting in the field or planting directly into containers. We have cut our transplanting losses by application of liquid fertilizer daily for the first three to four



days after potting. Even if they are in flush growth they can be safely potted by using Rapid-Gro, but shading is highly beneficial with tender plants.

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MR. HERBERT F. TRAUTMAN (Troutman Nurseries, Franksville, Wis.): Since Mr. Roller comes from Texas and I come from Wisconsin, I would like to call attention to the fact that the sun is much more effective in our locality than it is in Texas at the same time. You would probably have a more uniform daily amount of sunshine throughout the growing season than we would have. We have extremes of sunshine, which at the time the sun is the highest, would probably have quite an influence in rooting cuttings.

MR. ROLLER: I will say that temperatures inside these plastic tents may get as high as 110 degrees Fahrenheit. We have tried various types of plastic, including the opaque type. We find that we don't get much variation in rooting between opaque plastic and the clearer types. Light intensity definitely has to be cut down in our method of propagation.

MR. TRAUTMAN: What I was getting at is that you have a longer season of uniform temperature conditions for growth, whereas we have extremes in temperature. This was brought to my attention by a grower who claims that we get more growth in a shorter period of time than you do in the south. This is just something to consider.

MR. ROLLER: One thing I have noticed, too, even though we use the plastic and leave it out in the weather over winter, the cuttings root a little faster than by the old method of propagation. Rooting is definitely slower in the winter time than in the summer.

CHAIRMAN FILLMORE: I should like to comment about Mr. Trautman's statements concerning the amount of sunlight in the north as compared to the south. At the Equator, day and night are of equal length all year. As one moves northward, daylight is longer in the summer than it is at the Equator, and shorter in the winter. That is the answer to his question. There may be more heat units in Wisconsin in the months of July and August than there are in Texas, that is, it is possible, but there will certainly be longer day light in Wisconsin during July and August than in Texas.

The session recessed at 3:50 o'clock and reconvened at 9:30 p.m.

CHAIRMAN FILLMORE: We shall resume the program this evening with a discussion of the Phytotektor method of rooting cuttings. We are fortunate to have this method presented by its originator, Mr. H. M. Templeton of Winchester, Tennessee. Those of you who are members will have received a copy of the proceedings for last year and you will have noticed that Mr. Templeton is a junior member of the society. If Mr. Templeton can do this as a junior member, I wonder what he will be doing by the time he becomes a senior member.

MR. H. M. TEMPLETON: I want to apologize for reading this. There is so much I should like to say that I feel I must be efficient. I can't afford to ramble around.

Mr. Templeton discussed "The Phytotektor Method of Rooting Cuttings." (Applause)

## The Phytotektor Method of Rooting Cuttings

H. M. TEMPLETON  
*Winchester, Tenn.*

It is an honor to address this assembly of experts. It seems queer for me to stand here before you as a plant propagator because I am not. I am a machine operator. But I can tell you about a machine that apparently does know how to propagate plants. It is a device of wire and plastic and electrical equipment.

Since it has to have a name, we have called it the Phytotektor System. Each unit is 48 feet long and there can be as many units as you wish under one control system. It is an attempted union of the English sun-frame idea and the new mist humidification.

The ideas came from Sheat's book, *Propagation of Trees, Shrubs, and Conifers*, from Mr Wells' excellent articles in the *American Nurseryman* on mist humidification, from advice of Professors Stoutemyer and O'Rourke, and from eight or ten thousand hours of thought and experiment on our part.

Its object is to root cuttings in soil, where they can grow-on without being lifted, potted, or transplanted, until such time as they are saleable or are strong enough to be mechanically transplanted into the field.

It is not a method of merely producing rooted cuttings. If it is your intention to lift the cuttings and pot them, you can beat this system with a greenhouse. You can beat it with a sash house and on some objects with the common cold frame. Again, if you intend to lift your rooted cuttings you can possibly beat it, under some conditions, with open air mist systems.

But, if you need large quantities of heavy, bare root liners with good secondary root systems, we don't believe you can equal it in either costs or results, except with some methods of open field production in the deep south.

Our procedure has been developed—and the control system is required—because we can't afford to throw continuous mist onto cuttings in soil. There simply isn't any place for the water to go, there isn't any drainage.

The controls used this year, humidistat and timer, were set up with the idea we wanted to keep the air within the enclosure saturated. The more we got into it, the less we thought of this concept, and the more convinced we became that what we really wanted to do was keep the leaves wet all of the time.