

nozzle is individually adjustable, and the cost of such a nozzle will be only a fraction of any standard intermitting misting system now available.

When we think of a timing mechanism, especially adjustable, we think of many wheels and springs, that are required to make it work. In modern inventions, we often overlook the ways and means our ancestors lived by, the timing device in this valve is based on the theory, that when one opens a valve where there is water under pressure, and set it to a steady drip, it will continue to do so, the more the tap is opened the faster the water will drip.

In this nozzle, the water dripping through the valve, is compressed by means of a piston with two different diameters, the small one faces the full pressure of the line, and acting as the spring, the large one is facing the steady buildup of water, fed from the valve, making the piston move slowly, a part of a small and simple designed valve follows the move of the piston, and when the chamber is filled to a certain point, the valve opens, forcing the water out, and closing again.

I am not sure yet, of how and when the hydraulic system will find its place in our industry, but I do know, the advantages and the uses are many, the installation alone is like placing a tap in the line.

VOICE: The question I have regarding the adjustment of that valve. How long does it take to adjust that valve?

WERNER REXER: You can adjust it for one second or two seconds, anywhere up to 10 minutes. This is for the time off. The time on will always be the same.

HANS HESS: May I ask you this question? What approximately will be the cost of this valve?

WERNER REXER: This would depend upon the material used to make the valve. We could make it out of aluminum alloy, but that would wear too fast. I do not have much on the way of cost as yet.

HANS HESS: I along with many others will look forward to when you will have the nozzle ready for the market. Our next topic is success and failure in the propagation of *Tsuga canadensis* by cuttings. Mr. Carl Grant Wilson of Cleveland, Ohio.

SUCCESS AND FAILURE IN ROOTING TSUGA CANADENSIS

CARL GRANT WILSON
Cleveland, Ohio

The following is such a peculiar observation that if I had not observed it myself I would discount it 100%. But it occurred under my direct observation.

I am sorry I cannot deliver this paper in person but the illness of my wife makes it imperative that I get her out of this

severe northern weather until she recovers. This paper will, therefore, be read by my guest, John Fortney, or someone else assigned by the committee.

The Observation

In 1962 I had about 200 12/18" *Tsuga canadensis* in 5" containers sitting on a 4 foot pile of sawdust where I intended to leave them for the winter. These were spaced about 5" apart. They needed pruning to bush them out so I pruned them and left the prunnings fall on the sawdust. This pruning was done at the end of October, 1962.

In April 1963 I moved the above to sell and was astonished to pick up some 20 6/8" cuttings that were rooted; some with 4 to 6 roots from 1" to 2" long. This was the first time I had ever seen *T. canadensis* rooted.

I thought I had made a discovery. So, to check on it I did the following:

In April 1963 I put in the following hemlock propagation in peat moss:

- 1st: — 100 — No treatment, as check.
- 2nd: — 100 — Using Hormodin #3.
- 3rd: — 100 — Using 1% Indolebutyric Acid
- 4th: — 100 — Using 2% Indolebutyric Acid
- 5th: — 100 — Using 3% Indolebutyric Acid
- 6th: — 100 — Using 4% Indolebutyric Acid

All were wounded, morning sun only, and they were sprayed with water four or five times a day.

Results: All died by September, 1963. 100% failure.

Can anyone explain why, in 1962, the cuttings with no treatment and LAYING ON TOP OF THE SAWDUST should root but on a carefully prepared test as outlined above should result in 100% failure?

It occurs to me that one angle I may have overlooked in the above account is "Juvenility."

The 1962 trimmings dropped on the top of the sawdust were, undoubtedly, juvenile, in that they were trimmings from 12/18" stock.

The cuttings I put in peat moss in April 1963 were taken from stock plants 6 to 8' high.

Seems to me I would still consider the 6 to 8' Hemlock in juvenile condition.

ED HUME: I'd like to find out what kind of sawdust that was used.

KLASS VAN HOF: I wondered why you didn't continue using sawdust. Maybe your mistake was going to peat moss.

DR. HESS: I noticed in looking over Mr. Wilson's manuscript that the first year the cuttings were not treated in any way; the second year they were wounded.

CARL WILSON: The sawdust is just plain sawdust out of a sawmill. It was all mixed up. They don't keep that sawdust

separate. The reason I wounded them is because I have listened to Jim Wells.

JIM WELLS: This happens to be the second time that I have seen or heard of this same procedure. A neighbor of mine trimmed hemlocks and threw the trimmings on the brush pile in his garden, and the following spring he came up with a handful of this stuff, brought it to me so I saw it. He said, "Look, I've just gathered this from the top of the brush pile" and there was a great mass of roots from these trimmings. I took cuttings from the plant from which he had made trimmings and we rooted them in the greenhouse. I believe the answer is in the actual plant — a clonal difference between plants. We did root quite a lot of these particular hemlocks from this one tree, but I never bothered to take it any further because I wasn't interested in hemlock. But the coincidence of the system is rather remarkable.

ROY NORDINE: A question regarding this kind of sawdust. Was this sawdust old or new and was it from the sawdust in the woods or fresh sawdust from a finishing mill?

CARL WILSON: This is brand new sawdust probably less than 2 weeks old. Jim, I want to thank you. I thought I was maybe off my rocker.

PETER VERMEULEN: As a propagator in New Jersey, this is not in relation to Hemlock, but the procedure is almost the same. Tillman Gray in Manalapan Nursery used to root *Thuja orientalis* Berckmann's golden by taking the cuttings and piling them outside the greenhouse and letting them freeze for about 3 months. Then he brought them into the greenhouse inserted them in a medium of sand and they will root practically 100% for him. Now we might draw a correlation there.

HANS HESS: The effect of clonal selection of hemlock upon rooting is brought out very strongly at Curtis Nurseries in Calicoon, New York. They are growers of a lot of hemlocks. They have collected a lot of dwarfs in the woods and they have, I guess, the biggest collection of various types of hemlocks of any nursery in the country. And they have found that there are certain ones of these selections which root readily and then there are others which are virtually impossible to root. I think it might be a good future program to have one of the Curtis boys here or John Ruby to explain this to us. But this is very definitely brought out. There are types which they have been rooting very successfully for a number of years and other types which they have given up on and do not root at all.

We have as the next topic, cutting propagation of *Magnolia grandiflora* by Mr. William J. Curtis, Wil-Chris Acres, Sherwood, Oregon.