sideration as a crop, you should have them planted side by side in the field in order to make a final satisfactory commercial appraisal Here, we have some more or less basic rules to guide us For example, plants of *Taxus* grown from extreme lead shoots are almost universally poor developers of bottom structure While I haven't referred to it previously there must be some explanation as to why some types develop sparse root structure while others develop heavy root systems.

In conclusion, may I say that we are dealing with something that we do not as yet have rules for naming. We have a thing here, that has caused us innumerable difficulties in identification.

I believe that we have a good opportunity to strike pay-dirt if we persevere diligently in our efforts to observe, analyze, test and try, some of the variations of which I speak

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MODERATOR WARNER: Thank you, Mr. Turner. We are right on schedule and therefore will delay any questions until the end of the panel.

Mr. Harvey Gray from Farmingdale, New York, is our next speaker Mr. Gray.

MR. HARVEY GRAY (Long Island Agricultural and Technical Institute, Farmingdale, New York): This paper is an extract from a class project at the State Institute at Farmingdale in a course on Nursery Management It really is the class' work and not mine, although I asked them to set it up and run it.

Mr Gray then presented his paper on "*Tsuga canadensis* from Cuttings." (Applause)

TSUGA CANADENSIS FROM CUTTINGS

HARVEY GRAY
State University of New York
Farmingdale, New York

Rooting *Tsuga canadensis* cuttings has always presented a challenge to the plant propagator A test on the rooting of this plant was devised and put into operation on December 15, 1957. A total of 1518 cuttings was involved in the test. The cuttings were made from the previous season's growth, taken from five year old vigorous nursery plants. The ten inch cuttings were wounded with a spiral type cut and subjected to various synthetic hormone treatments. Indolebutyric acid diluted in talc and in alcohol at .8% and 2% concentration, making four different treatments, was used.

The following rooting media used straight or in mixtures as indicated in the table were: medium sand from a local sand pit, sphagnum peat and two grades of styrofoam, irregular pea size pieces and coarse dust. All media were placed in flats and moistened to an even consistency. The cuttings were inserted and the flats were placed in a polyethylene vapor proof case. All of our polyethylene cases are made vapor proof by completely enclosing and sealing. To accomplish this, the plastic film lines the case bottom and sides as well as covering the top.

On March 14, 1958, three months later, the cuttings were removed from the various media and the results were recorded With these tests it appears that the quick liquid dip treatment is better than the powder treatment. Not only did the liquid dip treatment produce more rooted cuttings but also the root systems were more extensive. There is an indication in the data presented that a concentration less than 20,000 ppm and more than 8,000 ppm might produce better results.

There is another area of interest which developed out of this test which needs checking. Many of the well rooted cuttings failed to make satisfactory growth during the following growing season. At the start of the test, the four plants on display were very much like the unrooted cuttings. After recording the results of the tests, all rooted cuttings, regardless of treatment, were put into one lot for growing on during the 1958 season. Now at the end of the season we note that about ⅓ of the plants developed in a normal manner. The other ⅔ failed to make normal growth. Growth from the buds was inhibited to a greater or lesser degree. This might be caused by the synthetic hormone treatments and needs verification and correction.

Table I.—Influence of the medium and hormone treatment on the rooting of Tsuga cuttings.

Medium	Hormone Treatment			
	QLD* 20,000 ppm	QLD 8,000 ppm	Powder 20,000 ppm	Powder 8,000 ppm
Sand	14.5**	20.8	0.0	4.1
½ sand, ½ peat	24.9	41.5	20.8	22.9
⅔ sand, ⅓ fine styrofoam	43.7	46.3	20.8	18.7
⅔ sand, ⅓ pea styrofoam	42.5	12.7	40.7	12.1
⅓ sand, ⅓ peat, ⅓ fine styrofoam	74.9	62.5	45.8	45.8
⅓ sand, ⅓ peat, ⅓ pea styrofoam	47.9	46.6	25.0	35.4
Peat	31.6	34.0	4.2	4.0
⅔ peat, ⅓ pea styrofoam	51.1	66.9	29.1	20.8
⅔ peat, ⅓ fine styrofoam	59.5	65.2	21.8	24.4

* QLD — Quick liquid dip
** Percent rooted

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MODERATOR WARNER: Thank you, Mr. Gray. We still have three more people to appear on the program. The next gentleman to appear will be Mr. Martin Van Hof.

Mr. Van Hof read his prepared paper on "Rooting Under Plastic." (Applause)