

NOTE ON JUVENILE LEAVES IN THUJA
OCCIDENTALIS

PROF. W. G. WATERMAN, NORTHWESTERN UNIVERSITY

The specimen described was obtained in the course of some experimentation on juvenile leaf production in *Thuja occidentalis*, suggested by some unpublished work by Doctor Land of the University of Chicago. Land reported that he was able to produce juvenile (needle) or adult (scale) leaves by varying the moisture condition of the air surrounding the young plants.

Among the specimens being studied were three plants each about three years old which had been placed in dry conditions. These in some way were overlooked, and when noticed again one was dead, the second nearly so, and on the third about half the branches had died. This third plant was revived simply by furnishing abundant water to the soil in its pot. The dead branches fell off, and new juvenile shoots appeared in many places on the main stem and branches. Fig. 1.

It is generally known that the seedling of *Thuja* consists simply of one elongated tuft of rather soft needle leaves. In the second year this elongates and usually one side branch appears and bears scale leaves. These scale leaf branches increase in numbers in succeeding years but for a number of years the end of the main axis bears the needle leaves, until it is finally lost sight of and presumably fails to continue growth after the tree increases in size. It has been noticed that young shoots coming out at the base of the main stem in conditions of strong shade and moisture will usually be of juvenile type.

In this case, juvenile shoots appeared in great numbers on all parts of the plant and one in particular, shown in Figure 2 has branched, but both branches bear juvenile leaves. In observing the specimens collected for this work, it was noted that there was considerable evidence of individual specificity in the production of juvenile shoots, individuals producing them rather freely, when apparently similar individuals under similar conditions produce only scale shoots. The specimen before its partial desiccation had

shown a notable tendency in this direction, one of its lower adult branches having four side branches tipped with juvenile shoots.

No definite conclusions can be drawn from this observation, but it is interesting to notice that extreme production of juvenile shoots followed resuscitation after at least partial killing of the young tree; that the conditions usually regarded as favoring the juvenile shoots were not employed in its resuscitation; and that this plant had always showed an unusual tendency toward the production of juvenile shoots.