

## ESTIMATING STANDING TIMBER.

A SUBSCRIBER of the Lumberman asks me to give him some advice about estimating standing timber. He states that his firm has occasionally a case where knowledge of the subject would be valuable to them, but "never to such an extent as to justify the employment of an expert timber estimator." He requested that I should state, "in a few short sentences," some rules for his guidance in such cases, writes "An Old Estimator" in the Northwestern Lumberman.

It is well to say at the outset that no intelligible advice can be given in any "few short sentences," for the art of estimating standing timber involves so many different questions that it is impossible to give any kind of an explanation that would be of any practical benefit, except by means of a somewhat lengthy communication.

No two estimators follow exactly the same methods, and I can only undertake to give as concise an idea of my own as possible. I would state further that these methods were learned from association with practical estimators of long and varied experience, whose estimates had been carefully checked up when the timber was cut and manufactured.

I spent a great amount of time in the woods years ago, learning the business with those men, and afterward in making estimates on my own account, on which large tracts of timber land changed hands, and I have yet to learn that any of my estimates were ever disputed.

As I learned the business of timber estimating, I formulated for myself a sort of system, which may be outlined briefly as follows, leaving out many of the minor details, which one in the business must learn to fit special conditions:

When undertaking to estimate the timber on a given tract, my first work, after establishing a headquarters camp on the land or near by, was to carefully go around its entire boundaries and make an outline map on a blank with which I was always provided. On it were laid out townships, sections, quarters and eighths, with the numbers and fractions to be filled up as required; hills, valleys, streams, etc., to be drawn in as found by actual examination. After outlining the body of timber I made careful notes of the lay of the land on each and every side, and the character of the standing timber closely adjoining it.

My next move was always to carefully cross and recross the tract in every direction, making my lines of crossing so near that I could observe correctly the kind and character of the timber between the lines I made, and also to observe the character of the ground, its actual topography, the hills, valleys and streams which crossed it. I made these preliminary explorations in both directions, practically marking the tract off like a checker board, making copious notes as I went. By this means I got a general photograph in my mind of the appearance of the entire tract.

My next move was to go over the ground carefully, pacing distances closely, following the compass always, and sometimes using the surveyor's chain where especial exactness was required, and from these second explorations I filled in as perfect a topographical map as could be made, showing every stream, if there were any, in its actual position, its comparative size, and any branches that it might have, also in

actual position. Every hill or elevation, and every valley was drawn exactly, though roughly, of course, but so as to allow all the difficulties in the way of getting out the timber, and the direction in which it would have to be hauled to get it to a stream, or railroad, or any other landing. It often happened that a copy of this topographical map would go a long way toward determining the cost of logging the tract, which, in its turn, would have a great bearing upon the value of the timber.

After making my map my next step was usually to divide the tract into smaller ones, according to the size of the whole, the density of the timber, and the roughness or smoothness of the ground, rough ground or dense timber requiring smaller divisions. These divisions were made by careful pacing and by blazing the lines, or by otherwise marking them, where there is much underbrush, by cutting enough to mark paths. My next step was to take one of these small subdivisions, go carefully over it, count the number of trees on an average acre, or two or more acres, from which to draw an average. At first I used a tape measure to obtain the girth of trees, which once obtained, with a careful estimate of the height, would give me a scale by any of the commonly used log rules, mentally cutting the tree into logs of merchantable length, and lowering the scale, which any scaler will understand, from the butt log up, as is done in measuring long logs.

Where the land was thinly timbered and there were but one or two species, it was an easy matter to determine the amount of timber of each species in each subdivision, and when the first examination has discovered little variation in the quality of the timber over different parts of the tract, it will usually only be necessary to estimate two or three of these small subdivisions to be sure of a fair average, when a total can be struck. But where, as in the case of hardwoods, there may be a number of species unevenly distributed, and where the land is unevenly forested, no accurate estimate can be obtained without going over every one of the subdivisions as a unit, carefully classifying the quality of the timber of each species and the proportion of each species in each subdivision.

When I had this work all done, if especial accuracy was required and the timber much mixed, and the quality variable under different sections of the tract, I usually retraced my work of actual estimating, with my first figures in my pocket, not to be referred to until the second estimate was complete. I aimed to allow a little time to elapse between the making of these two estimates, as the mind will often work differently under reversed conditions of looking at things.

After a few years' experience in the business, and having my mind well filled with pictures of different tracts I had estimated, and of the amount of timber found on each, always bearing in mind also the results of cutting and sawing on the same tracts, and the comparison of the mill scales with my estimates, I was enabled to make very close estimates of large tracts, after my topographical map was once made, and after what I might call my preliminary explorations, perhaps repeated once or twice, without any actual counting, or actual measuring of individual trees, simply passing over the different squares

of the checkerboard, as I may express it, and comparing them in my mind with pictures of other tracts, the actual figures of which I had at hand.

I was enabled, during the last years of my experience in the woods as an estimator, to make very accurate estimates on this basis, but I would not recommend it as safe for anyone but a long-time expert or one specially endowed with a natural gift for estimating things by sight.

That there is a gift in this line I must claim, for I have known men to work in the woods for years, under good instructors, and who were honest and conscientious, but who never became reliable estimators. On the other hand, I have known men who seemed to be able to estimate almost by intuition. They really had no special system, but outlined the tract they were estimating, and then walked over it back and forth until they had a fixed idea in their minds of the amount, character and species of timber on the land, and I am free to confess that these men habitually made remarkably close estimates.

I believe it is a rule with all professional land-lookers or timber estimators to make some sort of a topographical map at some stage of the proceedings, some preferring to leave it until the very last. I always found the making of the map at the outset a decided help in reaching accurate conclusions as to the quantity and character of the timber on the different parts of the tract.

These rules, or suggestions, whatever the reader may be pleased to call them, apply to all kinds of timber, with certain modifications, of course. In the hardwoods it is necessary for the estimator not only to be able to scale the trees and get their contents, but to know the natural defects, whether on the surface, or apparent only by certain external signs. He should also know something of the effects of different soils and surface upon the quality of the growing timber. Without such knowledge, any estimate he may make would practically only be a gross one of scale of the timber sawed through and through. In the general run of hardwood timber such a gross estimate should be scaled down say from 25 to 40 per cent. in order not to overrun a subsequent mill tally.

It is quite an easy matter to estimate white pine on ordinary level dry pine land. But where the land is interspersed with streams with marshy borders, with swampy or boggy places, clayey hillsides, or cobbly ridges, it requires all the skill of the most wideawake man in the business to avoid making the most glaring mistakes, at least in the quality of the timber.

In the hardwoods, where the prevailing timber is white or red oak, and the land is of a generally uniform soil, and is high and dry, the work is quite easy, and there should be little or no trouble in making an almost absolutely accurate estimate of what the tract would cut in board feet. But where the land is rolling, with variable soil, as has been said of pine land, and the oak is only one of several prevailing species, there is more difficulty, and more skill is required.

I might say in conclusion that the business of timber estimating is one that cannot be learned from any book, or by any mere theoretical instruction, but preferably under a well posted teacher, and in actual field work. It is all right