

In stands that are not dense, where the timber is all to be estimated, this method will be found quite satisfactory. In dense timber the estimator feels the difficulty of estimating different distances for the corners of the square and the centres of the sides. When there is necessity of pacing a square within the 2½-acre square, as described, the method has no advantage over the strip method and is more cumbersome.

If numerous small separated areas are to be estimated, the circle method has the advantage in that the distance of the boundary line from the centre is constant, and hence less perplexing.

#### THE MICHIGAN METHOD.

In this method it is customary to estimate strips 40 rods wide. The estimator is assisted by a line man, who runs a compass line along one side of the strip and measures the length of it by pacing. The estimator passes back and forth across the strip and counts the trees. The distance from one side to the other he measures by pacing whenever his direction is away from the compass man. By means of a police whistle he signals to the line man to move forward, or halt, as necessity requires. Whenever the strip reaches the length of half a mile a record is made of the fact that 40 acres have been estimated. As the method is intended to be somewhat thorough, the strips are run adjacent to each other, the compass man running his lines 40 rods apart.

There are two or three other methods in common use in Germany, but as they are not at present applicable to our forests, a description of them is scarcely necessary. Those who wish to read a description are referred to Adam Schwappach's excellent little book entitled "Leitfaden der Holzmeskunde."

It should be remembered that the methods described in this article are methods of estimating. To ascertain the quantity of timber in a forest, foresters use methods of measurement, which, of course, do not come within the scope of my paper.

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Mr. A. Knechtel, to whom we are indebted for the article in our present number on "Methods of Estimating Timber," is a native of Canada who has been making a special study of Forestry in the United States. He had the opportunity before doing so of becoming practically acquainted with the manufacture of lumber in Canada, having learned the wood-turner's trade and worked at carpentering for some time, besides being engaged for nine years in the sawmill business in Muskoka, Ontario. Wishing, however, to gain a larger knowledge of the subject, he took a four years' course at the Michigan Agricultural College for the degree of Bachelor of Science, and a further course of the same length at Cornell University for the degree of Bachelor of the Science of Forestry, both of which degrees he now holds. He taught botany and mathematics for eight years in the High Schools of Chesaning and Leslie, Michigan, and was instructor in mathematics for one year in the Michigan Agricultural College. At present he holds the position of Forester with the New York State Forest, Fish and Game Commission, and is engaged in making a survey of the forest conditions in the Adirondack Preserve. Previous to this he was in the employ of the Bureau of Forestry for the United States, for which he made a study of the regeneration of the commercial trees of the Adirondacks. Mr. Knechtel has kindly undertaken to furnish some additional articles in the future.

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Any member of the Forestry Association who has not received a copy of the Second Annual Report may obtain one by applying to the Secretary, Mr. E. Stewart, Dept. of the Interior.

#### THE MAPLE.

All hail to the broad-leaved maple,  
With its fair and changeful dress,—  
A type of our youthful country,  
In its pride and loveliness.  
Whether in spring or summer,  
Or in the dreary fall,—  
'Mid Nature's forest children,  
She's fairest of them all.

Down sunny slopes and valleys  
Her graceful form is seen,  
Her wide, umbrageous branches  
The sun-burnt reaper screen;  
'Mid the dark-browed firs and cedars  
Her livelier colors shine,  
Like the dawn of a brighter future  
On the settler's hut of pine.

She crowns the pleasant hill-top,  
Whispers on breezy downs,  
And casts refreshing shadows  
O'er the streets of our busy towns;  
She gladdens the aching eyeball,  
Shelters the weary head,  
And scatters her crimson glories  
On the graves of the silent dead.

When winter's frosts are yielding  
To the sun's returning sway,  
And merry groups are spreading  
To sugar woods away;  
The sweet and welling juices  
Which form their welcome spoil,  
Tell of the teeming plenty  
Which here waits honest toil.

When sweet-toned Spring, soft breathing,  
Breaks Nature's icy sleep,  
And the forest boughs are swaying  
Like the green waves of the deep;  
In her fair and budding beauty,  
A fitting emblem she  
Of this our land of promise,  
Of hope, of liberty.

And when her leaves, all crimson,  
Droop silently and fall,  
Like drops of life-blood welling  
From a warrior brave and tall,—  
They tell how fast and freely  
Would her children's blood be shed,  
Ere the soil of our faith and freedom  
Should echo a foeman's tread.

Then hail to the broad-leaved maple,  
With her fair and changeful dress,—  
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In its pride and loveliness;  
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Or in the dreary fall,  
'Mid Nature's forest children  
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—REV. H. F. DARNELL.