

to estimate the merchantable contents of a stand of timber can be acquired only through practice and experience in the woods. The estimator must be able to recognize the external signs of defect and have some knowledge of the loss due to hidden imperfections. He should also know the local conditions of lumbering and be able to judge the cost of logging and milling before he can place a value on the stumpage. All this information is a matter of field training, and cannot be learned in a purely theoretical manner. It is a matter of good judgment and experience and not a matter of mere method. This does not mean that there should not be any method in the procedure of making such an estimate, nor does it mean that one method is just as good as another. It does mean, however, that an estimator who is familiar with several methods of cruising is in a position to apply the method most suitable for the particular locality in which he happens to be working, and that his returns will be much more reliable than mere guesses.

In the case of ocular estimates, each cruiser does his work in his own way. Some multiply the *estimated* number of trees by the contents of the *average tree*, making due allowance for defects; others count the trees and multiply by the *estimated* contents of average trees, allowing for defects; and still others estimate the contents of each tree separately, making deductions for unsoundness and other imperfections. In the case of irregular hardwood stands, this latter is the only reliable method of estimating, because many of the older trees are almost worthless for saw timber, and would not pay for the cost of removing them.

The more defective the trees are, the more preferable is the judgment of estimators who have had long experience in the mill and in the woods, to the methods of mere measuring. In sound timber, however, the method of measuring the trees on a known percentage of the total area is much preferable to the ocular estimate of a timber cruiser—no matter how experienced. Furthermore, a cruiser may be able to estimate pretty closely in the locality in which he has had long experience, and in a new region find himself very much "at sea." Possibly this fact explains the origin of the term "cruiser." Be that as it may, the cruiser finds it necessary to establish a new standard which will enable him to estimate correctly the contents of stands in the new region in which he finds himself. The quickest and surest way to establish such a standard is by a careful selection and exact measurement of representative trees in the stand. Having established his new standard of reference he is then in a position to correctly estimate the volume of the timber in the new locality in which he finds himself. When the timber is fairly uniform in size and evenly distributed over the tract it may suffice to estimate the yield of a few sample acres, find