COST OF MARKING STANDING TIMBER

BY D. E. NICKERSON

Dominion Forest Service, Ottawa, Ontario

LACK OF adequate cost information has been one of the principal stumbling-blocks in selling many silvicultural cutting systems in Eastern Canada. The need for this type of information has arisen in connection with the Green River Project and it has been realized that the only way it may be obtained is by a series of experimental cuttings carried out under actual operating conditions on a sufficiently large scale to provide cost information of some reliability. The question of the size of operation necessary to give a reliable indication of costs could be the subject of endless discussion. We are proceeding on the assumption that an operation which provides an initial cut of between 500 and 1000 cords is sufficiently large to provide cost data of reasonable reliability. This short article on the cost of marking trees in preparation for the first commercial test of a partial cutting method on the headwaters of the Green River in Restigouche County, New Brunswick, represents a start toward the accumulation of some of this badly needed information.

The area selected for the experiment contains 173 acres, of which 160 acres were marked for cutting. The difference is accounted for by an unmarked fringe one chain wide left around the outside edge bordering clear-cut areas. Sixty-seven per cent of the area marked consists of two-storied stands, and the remainder is about evenly divided between mature mixedwood and mature softwood. Balsam fir is the most important tree in point of both numbers and volume, followed in order by white spruce, white birch and yellow birch. Much of the birch is dead, and the rest is in an extremely unhealthy condition. A few large spruce were removed from this general district about 50 years ago, but no trace of this cut has yet been found on the experimental cutting area. It may therefore be considered to be virgin forest.

The two-storied stands are probably as expensive stands to mark as are likely to be encountered anywhere. The overstorey consists of residual balsam and white spruce from the budworm epidemic of 1913 and 1917, while the understorey is composed almost entirely of dense young balsam fir dating from the same epidemic. In openings this understorey may reach a height of twenty-five feet, but, depending on the density of the overstorey, this average height may drop to ten or fifteen feet. Visibility in many cases is one-half chain or less, and the markers' movements are continually hampered by small trees. A similar situation existed in the mature mixedwood type, where shrub vegetation was a continuous nuisance, but in the mature softwood type the markers could move about freely.

The application of marking rules varied somewhat between cover types, but overall about one-third of the total softwood stand was marked for cutting. Disregarding type separations, 4.9 cunits per acre of the larger balsam

fir (volume of average tree 17 cu. ft.) were marked for removal from stands containing 11.0 cunits of balsam fir and 4.8 cunits of white spruce, or a total of 15.8 cunits per acre in all. About 80 per cent of the trees marked were 10 inches or larger at D.B.H.

Marking cost studies were based on the use of a three man party consisting of two markers and one tallyman. The tallyman carried a box compass and proceeded in a straight line. The markers used him as a reference point and marked the trees out to about one-half chain on either side. They then calipered the marked trees and called the diameters to the tallyman. After proceeding about ten chains the tallyman travelled at right angles approximately one chain and returned on the reverse bearing. The actual distance between strips was governed by visibility, and in some cases it was found that each marker could work a strip up to one chain in width without confusion. Dabs of yellow paint about three or four inches in diameter were made at breast height and below stump height on trees to be removed. Trees were marked on the west side only, strips ran north and south, and the progress of the marking party by strips was from east to west.

This work took 254 man hours, or, in other words, 0.63 acres were marked per man-hour. In an eight-hour day a three-man party under similar conditions could be expected to mark approximately 83 cords of large balsam fir on 15 acres. If labour could be obtained for \$5 per day for this work the labour cost would be \$1 per acre or 18 cents per cord. To this must be added about three cents per cord for paint, making a total marking cost of 21 cents per cord.

Marking costs are of course dependent, among other things, on the method used. On many areas the use of the three-man party as described would be wasteful. The need of tallying each tree as marked is also open to some question, since a sampling cruise after marking could provide a check on the marking. It has been claimed that the use of a spray gun instead of the paint can and brush is more efficient. Had this been used in the present case it is probable that the markers could have both marked and calipered trees more efficiently, since they would not have been encumbered by so many awkward articles of equipment.

Paint was a more expensive item than had been expected. A low grade of yellow house paint was used but it was found that this would stand little dilution (and still give a bright mark). About one part of kerosene to three parts of paint was found to be the maximum dilution which could be used. Although reasonable care was exercised there was bound to be some wastage of paint where open cans were used.