

croaches on the pine. Even if the pines are not replaced by scrub oaks, the thinning of the thicket causes an open mature stand. The loss is at first due to the decreased grown yield and consequently to the formation of knotted and short butt trees, which lower the grade and value of the lumber.

The solution of the fire danger lies fully as much in prevention as in control. Even among land owners there is not a sufficient appreciation of the damage resulting from fire, especially to young growth; while the general public is indifferent to it. While a great many of our fires originate from locomotives, yet most of them originate from carelessness and from people burning their brush land, or from campers or hunters, and occasionally from a careless smoker.

To restrict and confine the fires to areas where annual burning may be safely carried on requires the development of a State protective system, backed by every intelligent person in the State, with wardens who will enforce, under the direction of a competent State official, the laws enacted with this particular end in view.

The disposal of brush would be of great benefit in reducing the fire danger on cut-over land. On the national forests in the West, where logging operations are directed by the government, brush disposal by piling and burning or by scattering, forms an important part of the operation.

Perhaps at the present time great difficulty would be experienced in attempting to enforce or supervise any provision for brush disposition over large areas like the long leaf pine and upland regions of Louisiana. Yet, nevertheless, it is well to keep in mind the important fact that the disposal of brush would greatly reduce fire, in order that when the proper time arrives this feature of prevention can be taken care of.

Aside from the loss by fire there is a great economic waste under present logging methods, and there is even a considerable waste at most of the mills. Probably this waste cannot be at this time restricted by legislation.

FOREST REPRODUCTION.

Few lumbermen consider the possibility of a second cut of pine on their land, and as before stated, they are rather looking

to the agricultural development of these lands, no matter how long delayed, for their profit, rather than to forest renewal.

It may be said, however, particularly in the case of those operators who have before them fifteen or twenty years of operation, that it is probable that the increase in stumpage value in the meantime will more than justify the care of young stands. Investigations of the cut-over condition in different places of long leaf pine lands have shown interesting results.

It is not generally realized that in many long leaf pine forests fully one-fourth of the area is covered with thrifty young timber less than 14 inches in diameter. Much of this young timber is destroyed by the usual logging methods, especially where steam skidders are used. While it is true that some of the heart trees 12 or 14 inches in diameter are as old and have reached their maturity as completely as the timber 24 inches and over, it is generally the case that a large proportion of these small trees are vigorous sap trees. These small trees are developing slowly underneath the larger timber, but when healthy and full-crowned they grow rapidly when the overtopping trees are removed.

In several instances in Texas and in Louisiana, where the timber marked for removal consisted in timber over 14 inches in diameter, and considerable timber of small size which gave little promise of increase in growth, the result showed that an average of about seventeen hundred feet would be left on each acre. The growth of this crop for twenty years, and not allowing for accelerated growth after logging, added to the amount of timber at present too small to be cut, gave a total for the second crop at the end of twenty years of thirty-four hundred feet per acre. Lands left in this condition, if protected from fire, would rapidly become restocked with pine sapplings which would form the basis for a third cut if the land is not to be used for agricultural purposes.

Under such conditions, it is not unreasonable to anticipate a yield of from two thousand to twenty-eight hundred feet per acre at the end of twenty years, where from four hundred to five hundred board feet per acre have been left after the first logging.

The value of reproduction on cut-over land is, of course, prospective, but the effort which should be made to obtain this repro-