

intermediate, and definitive forest products resulting from conservative exploitation or silvicultural management. Ready markets can only be reached when adequate and economical means of transportation are available, therefore the writer urges that, in all cases where considerable individual participation in the practice of forestry or in tree-planting is possible, the Government should assume the responsibility of guaranteeing reasonable facilities for transport wherever it is in the public interest. This may mean road-formation from the property to markets or common carriers, or it may mean the extension of railway sidings, accommodation, or spurs. In all cases, however, the Forest Service should be asked to investigate and advise as to the economic advantages of public action in extended assistance.

Solution of Item (5) (the fear that the investment in the long-time business of forestry may prove disastrous or unprofitable).—*By State financial assistance for private forestry and forest exploitation.*

An important element to private forestry is the cycle between "seed" and "sawdust," as the investment may be locked up for at least a generation, but the State as a perpetual authority interested in the national well-being over many generations can with great advantage to itself engage in forest management. Therefore a system of partnership between owners and the State, by which the proprietor furnishes the land, labour, and maintenance, and the State advances cheap money and supervision, should successfully remove one of the chief obstacles to private tree-growing.

In furtherance of this principle of the State advancing financial assistance the writer advocates the establishment of a State Forest Loan Fund organized to advance funds for assistance in private growing of trees, and for the purchase and improvement of forest lands on which owners might wish to practise sound and practical forestry.

The State Forest Loan Fund should also be available for the advancing of capital on partnership or other terms to the forest industry of New Zealand. [Precedents: (1) Principle in "Loans for Public Works in Mining Districts," Local Bodies' Loans Act (Consolidated Statutes, 1908); (2) Act No. 8 of 1909, "An Act to make further Provision for the Closer Settlement of Land," &c.; (3) Act No. 41 of 1919, "An Act to authorize the Making of Advances for the Promotion of the Fishing Industry."] The forest industry is to a large extent organized in small units, and is in particular need of the development of credit facilities. The Government of New Zealand is responsible to a large extent for this instability, for by its system of disposing of public timber the large, efficient installation has been discouraged. If the forest industry had the advantage of Dominion assistance in the organization of credits, cheaper capital would be made available to assist both in forest production and in more efficient utilization of existing forests. High interest-rates, due to unorganized small borrowing, result in wasteful manufacture.

The Forest Commission of Great Britain have adopted this policy of State financial assistance by loans on a long-time basis to forest growers and exploiters, and the United States of America is seriously considering its adoption. In New Zealand the principle has long been in force with reference to agricultural development, and now applies to the fishing industry.

The proposal is sound, in the public interest, and under a careful, businesslike administration should—

- (1.) Create an important private participation in tree-growing on a sustained-yield basis;
- (2.) Assist the forest industry by providing money at a low rate of interest for the establishment of a local forest industry and improving the economy of manufacture;
- (3.) Stabilize forest industry and ensure the development of outlying districts;
- (4.) Tend to reduce the price of forest products;
- (5.) Stimulate high economy in manufacture;
- (6.) Encourage the small operator, and thus permit of a close supervision and control in the interest of the conservation of forest supplies, &c.

The writer suggests the establishment of a Forest Loan Fund of £100,000, to be administered by the Forest Service, on the advice of the Consultative Forest Board, along the lines which have been briefly exposed.

FOREST-PROTECTION PROBLEMS.

Protection of the Forest from Fire.

Inadequate fire protection may nullify all attempts at such forest management as the regulation of cutting to ensure a second crop of timber and the planting of denuded areas.

Generally speaking, the *forest-fire problem in New Zealand is a serious one*, and without its solution by this Service no stability can be secured. Constant use of fire in the daily life of the people and in the industries, sparseness of population, relative inaccessibility of timber—all tend to expose to fire damage the forest resources of the country.

Forest-fire plans must be developed along the lines of modern fire-prevention, so that the liability may be lessened, the fire hazard reduced, the cause and difficulty of discovery and control minimized, and so that promptness and efficiency in actual fire-fighting may be secured. The fire plan involves a systematic study of the conditions in each forest area and in each forest, and it must be remembered that it is impossible to prepare one standard plan which will meet the local conditions of all forests. Complete information is a pre-requisite to the formulation of fire-control measures, so it will be seen that early action is necessary along this line by the Forest Service.

One particular detail that must be worked out is the liability of the Department of Railways as to fires originating from their right of way. Apparently their liability is a negligible one. This, however, must be overcome, for perhaps the greatest enemy to the forest is the locomotive unequipped with spark-arresters.

Another point in connection with fire protection is the vital necessity of easy communication: the forest subject must be opened up by auto-roads, pack-trails, telephone-lines, &c.