

5. SILVICULTURAL INVESTIGATIONS.

Westland Forest Experiment Station.

The experimental work in connection with restocking the cutover lands near Hokitika with exotic species was further advanced by the planting of 222,310 trees on 368 acres. The total area restocked now stands at 850 acres. The principal species planted were insignis pine (*P. radiata*), *Pinus muricata*, *Cupressus macrocarpa*, *Cupressus Lawsoniana*, *Thuja plicata*, and various eucalypts. Small numbers of six other species were also planted.

The nursery in connection with the experimental station supplied 190,000 trees for the 1926 planting; 1,250,000 trees remain in stock for use in 1927 and 1928.

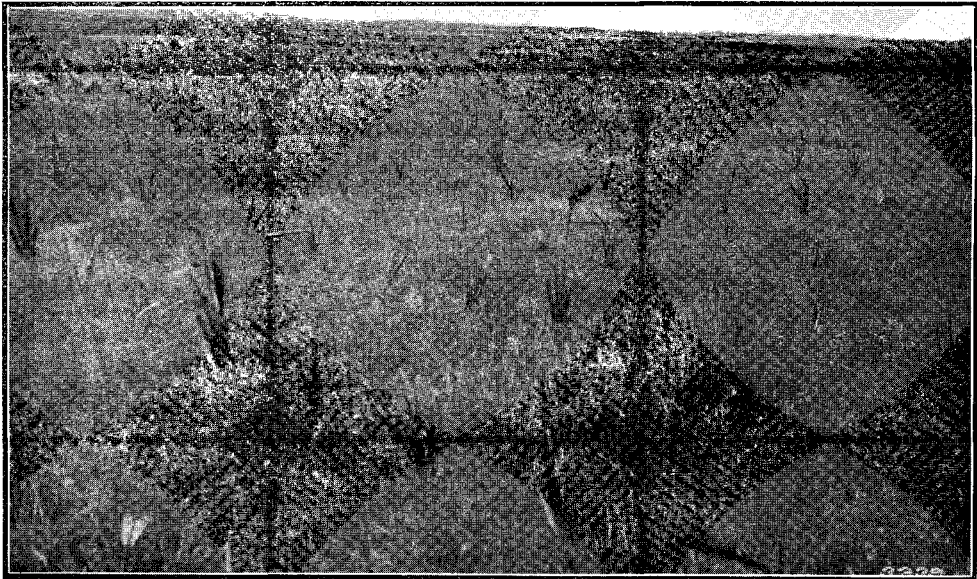
Experimental Planting on Dredge Tailings.

The experimental planting of exotic trees on the dredge tailings at Rimu was continued, and 22,450 trees were planted on 38 acres, bringing the total area planted to 50 acres.

The species used this year were Corsican pine, pondosa pine, Douglas fir, and Norway spruce, and the percentage survival averaged 82 per cent. The mortality was chiefly caused by heavy rains washing the trees out of the tailings. The whole of the available tailings at Rimu have now been planted, and the results to date are most encouraging.

Rangitikei Sand-dune Experimental Station.

The knowledge and experience gained from the experimental work which has been carried out at this station since May, 1921, has enabled larger areas to be treated during the year with better results and at a lower cost per acre. Marram-grass was planted on 372 acres, and, although winds of high velocity were frequent and the rainfall low during the planting season, a very successful establishment was obtained. The area of sand-dunes now planted with marram-grass is 1,045 acres.



EXPERIMENTAL PLANTING OF FLAX, RANGITIKEI SAND-DUNE EXPERIMENTAL STATION.

The planting of exotic pines on the stabilized marram-covered dunes was continued, and 88,650 trees were planted on 130 acres, bringing the total area planted to 315 acres. Between the dunes there is a large area of low-lying rush country which cannot be drained sufficiently for tree-growing owing to the lack of fall. As it is desirable to put this land to profitable use, two experimental plots of flax (*Phormium tenax*) were formed. The result to date is most promising, but it is yet too early to decide whether it will be a profitable undertaking to plant the whole of the wet area, which amounts to over 1,000 acres.

Experimental plots of flax and toetoe were also established immediately to the rear of the fore-dune, to ascertain if these species will afford the shelter necessary before trees can be planted successfully in such an exposed position. An experimental planting of kikuyu-grass was also made, and where the sand is less than 1 ft. deep it is growing well and is forming a dense mat. Elsewhere it failed to strike.

The tree nursery at Tangimoana supplied 100,300 transplants, which were used in the 1926 planting and to fill the blanks in the work of previous years. Seedlings to the number of 140,000 were transplanted for use in the 1927 planting season.

Statistical Growth Studies of Exotic Trees.

Growth studies of the various exotic species in the State plantations were continued, and forty-six sample plots were measured in the South Island plantations. Yield tables were prepared for ten