

If, therefore, in these suggestions I have been able to throw any light on a somewhat difficult problem, and through my candid criticism on the position which forestry unfortunately occupies on this side of the globe, New Zealand reverts to real forestry, and takes it up this time in a large-hearted vigorous fashion, determined that there should be no faltering or turning back, then I am certain she will find her forests a blessing and means of employment to thousands, and the Government will never regret any money spent in insuring systematic scientific conservation.

EXAMINATION OF NEW ZEALAND FORESTS.

SOUTH ISLAND.

In compliance with your request that I should inspect the colony generally, with the object of advising the New Zealand Government upon forest-conservation, I left Wellington on the 29th July for Picton, and on the following day travelled by rail and coach, *via* Blenheim, to Havelock.

Following the fine valley of the Wairau for some distance in the keen frosty air, the lofty peak of Tapuaenuku (9,462 ft.) stood out clearly, rising above other snow-clad mountains.

Doubtless, at one time, before civilisation reached this valley, the Wairau River ran its impetuous course through dense pine forests; now, bare hillsides and shelterless river-flats meet the eye on all sides. Along the main Nelson road, through the Kaituna Valley, traces of the old forest are seen here and there; but this valley, too, has been completely denuded of timber, and is now solely devoted to grazing purposes, yet twenty years or so ago numerous mills flourished here, and immense quantities of timber of excellent quality were obtained.

Pressing on, we arrived at the pretty town of Havelock, and the lovely waters of the Pelorus Sound suddenly revealed themselves. A day was spent in examining the forest of the Pelorus Valley, and the sawmill (named after the Sound) owned and worked by Mr. Brownlee, one of the pioneers and patriarchs of this district. This gentleman started sawmilling at Mahakipawa in 1864. Then the Kaituna Valley was invaded, and, to the incessant hum of the saw, the forest giants fell before the axes of civilised intruders. The forest was soon cleared, and as the timber disappeared the mills followed suit one by one, and, the *débris* being burnt off, the land was taken up for grazing and agriculture. Thus the Wairau Valley first, and then the Kaituna, under the combined efforts of the farmer, bush settler, sawmiller, and their followers, were denuded of timber, and in a very short time miles of forest were absolutely swept away, and the land devoted principally to grazing.

The fine valley of the Pelorus is now being subjected to similar treatment, and, with the torch of the small settler in full swing, its forests also will within a few years be things of the past.

Here, close to water-carriage, and within six hours' steam of the capital, are millions of feet of some of the best pine timber New Zealand possesses. Yet the Government is actually permitting settlement in the heart of the forests, and even ahead of the mills. The result is, of course, free use of the firestick, and the destruction annually of thousands of pounds' worth of timber—all for the sake of a few sheep.

In the years to come, and not far distant, when New Zealand has to import Baltic and Oregon clear-pine and American red-pine, a fierce regret will assail the heartstrings of those who have to pay the piper as they look back at the shameful waste and wanton vandalism of the early settlers.

Mr. Brownlee is a typical sawmiller, of a kind that New Zealand may be proud of. Of keen business intellect, he has gathered round him a mill plant second to none in Australasia. Everything is of the best, and up to date. His tramway, twelve miles long, is a marvel of saw-mill engineering, and the bridges would do credit to any railway in New Zealand. One, over the Pelorus, is 320 ft. long by 16 ft. wide; the Wakamarina Bridge is 200 ft. long and 20 ft. above the water. Birch (beech) piles and iron girders are used in the construction of these bridges, which are solid and substantial. All through the line is properly constructed and well ballasted, including an embankment half a mile long and 20 ft. high. Mr. Brownlee uses a hauling-engine to bring logs from the bush on to the tram-line, whence they are drawn to the mill by a steam-motor. (This plan was copied from that adopted by Mr. John Hay, of Hastings, Tasmania, which I saw in operation during 1887.) The hauling-engine is practically a locomotive, with a pair of 9 in. cylinders, 18 in. stroke, gearing reduced to 14 to 1. The drums are of 5 ft. diameter and 12 in. wide, with 12 in. flanges. It works fore and aft, parallel to the tramway, to connect with which half a mile of wire-rope is used. For bringing logs across the river a curious contrivance is utilised. This is a hollow iron cone, torpedo-shaped, made of $\frac{3}{8}$ in. boiler-plate, in various sizes, strong strapped iron edges, and a ring at the point. These cones fit on to the end of the log, and an endless wire rope runs on pulleys into the river. The motor is hitched on, and the log is speedily hauled through the river and on to the tramway. Mr. Brownlee has also patented an automatic snatch-block, which is a marvel of simplicity and usefulness, doing all that is claimed for it with ease and celerity. The present mill was started in 1888, but the tram-line was constructed in 1878, ten years earlier. The output of the single mill then in use was about 2,000,000 ft. superficial annually. That of the present mill exceeds 3,000,000 ft., clearing an area of about 300 acres every year. The area, in all, so far cleared of timber treated by these mills is about 2,000 acres. Mr. Brownlee estimates the quantity of timber in the Pelorus Valley at about 50,000,000 superficial feet, though much of this is difficult of access.

The Rai Valley still contains about 130,000,000 superficial feet, chiefly rimu (red-pine) kahikatea (white-pine), mixed with matai and miro. With the demand as at present, and fair-play from the settlers, there is still thirty years' supply in this district. The altitude level of the timber trees is about 2,500 ft. above the sea, but the best are those in the river-flats and up to a level of 1,000 ft. Beech (the so-called birch of New Zealand) is the prevailing timber on hillsides and mountains above 1,500 ft., growing smaller and more stunted up to 2,500 ft., which is here practically the limit of tree-growth. The ranges from 2,500 ft. to 9,000 ft. are destitute of timber, and, as mountains of such altitude are very numerous, and form the whole central backbone of the South Island, there is