

It has been extensively used for bridge timbers with the best results, but I am not aware of any instance of older date than the Auckland Wharf.

The superiority of kauri to Tasmanian blue-gum, under heavy wear and tear, has been demonstrated by the use of both timbers on the Auckland Wharf, when the former was found to last twice as long as the latter, under severe tests.

At the Taupiri Coal mines, sleepers were in good condition after from five to nine years' use. It has been used in the tramways of the Thames Gold Field, where it is sound and good after being five years in use. Mr. A. Sheath, Inspector of Telegraph Lines for the North Island, informs me that the kauri kerbing opposite Government House, Auckland, was taken up after having been laid eighteen years, and was then perfectly sound.

It has been employed for tramway rails on the Thames Gold Field, and was nearly everywhere found in excellent condition after five years' wear and tear. At the Waikato Coal Mines it has been employed for the same purpose for nine years, and is still serviceable, which is remarkable, as the rails were cut from small-sized trees growing in the neighbourhood. Totara and rimu rails laid at the same time have perished, the former probably from having been also sawn out of young timber.

On the Thames Gold Field it is used for mine props, struts, and cap-pieces, and maintains its character for durability, although for this purpose tanekaha and black birch are often used on account of their smaller cost.

It is not adapted for piles for bridges or jetties, as it is attacked by the teredo directly the bark has decayed; and although squared timber will resist the teredo for a longer period, it is greatly inferior to totara for this purpose.

A striking instance of the uselessness of sappy timber for permanent works was afforded by the telegraph line, erected in 1863, by the Royal Engineers, between Auckland and Queen's Redoubt, in which most of the poles were round kauri saplings, from 14 to 18 inches in diameter, almost destitute of heart-wood. Many of these were useless from decay in less than three years from the date of their erection. The whole line was taken down in about five years, and replaced by sawn heart posts, which are likely to stand for many years.

It is, however, worthy of remark that the sapwood of kauri and other native timbers is less speedily affected by decay when exposed to the influence of sea-water. In a small jetty at the Thames, one or two kauri poles, about 7 or 8 inches in diameter, driven nearly five years ago, are still sound and fresh, although nearly destroyed by teredines below the water-level. Within a few yards, heart of kauri scantlings, driven at the same time, are scarcely attacked.

Near Papakura, an ancient kauri forest has been buried at some remote period: in some places the logs still show above the surface. Much of the timber has been dug up in perfectly sound condition, and used for sleepers on the Auckland and Waikato Railway. A more convincing proof of its great durability could scarcely be afforded.

A steady export of kauri is carried on, chiefly with Australia, Tasmania, and Mauritius; it is, in fact, the only New Zealand timber exported to any extent. It is significant alike of its intrinsic value and of the abundance in which it occurs in the limited area to which it is confined, that the export of kauri timber from Auckland, for the seven years ending 31st December, 1873, amounted to £144,068, while the total export of all other timber from other parts of the colony amounted only to £19,739; and, as showing the growing estimation in which it is held, it may be further remarked that its export has more than doubled in the last three years.

2. TOTARA.—(*Podocarpus Totara*.)

The totara is found throughout the colony, usually attaining its greatest dimensions on rich alluvial lands, or on dry hill-sides of low elevation. Large specimens are found north of the Waitemata, but it does not occur in abundance until after passing the southern limit of the kauri. Although not equal in size to the largest specimens of the kauri, trees are occasionally found from 8 to 10 feet in diameter, 4 to 6 feet being the average size; height, 40 to 70 feet. From the extensive area which it occupies, it has been more generally used than the kauri, and is the chief timber employed for building purposes in the Province of Wellington, where it occupies a similar position to that held by the kauri in the Province of Auckland.

Although, as shown by the Sydney and Dunedin experiments on the strength of timber, totara ranks below kauri in point of strength, it is scarcely, if at all, inferior to it in durability. The general unanimity of opinion in its favour is remarkable: in one or two instances there is a disposition to consider it superior to kauri for general building and constructive purposes, but I have been unable to procure evidence in support of this conclusion. The actual durability of either timber must be considered an unsettled question for some time to come.

I have not examined any totara buildings so old as the kauri weather-boarding at the Bay of Islands, but the oldest totara houses, probably constructed above twenty-three years, are equal in condition to those of kauri of similar age; the weather-boarding in good condition, the wall-plates more or less decayed when in contact with the ground, but otherwise sound and good. Of course, these are cases in which good timber only has been used; sappy timber of either kind would perish in much less time.

Totara post-and-rail fences are expected to last from ten to thirteen years, and would probably stand for a longer period if split of larger dimensions. I have not seen any fence in thoroughly good condition that has been of greater age than twelve years.

Totara sleepers have been in use on tramways at the Taupiri Coal Mines for nine years; some of them are still good, although of small scantling, and split from small-sized trees. On the Invercargill railways, totara has been sparingly used for sleepers. All that I saw were in capital condition, after having been down eight years, and contrasted strongly with rimu sleepers, which were worthless at the end of seven years.