For piles for marine wharves and bridges, &c., it is one of the most valuable timbers known. In addition to its great durability, it has the power of resisting the attacks of teredo for a considerable period, especially if driven with the bark intact. It is said that trees felled during the growing season will resist the attacks of teredo for a longer period than those felled during the winter. Although I have been unable to obtain direct evidence in support of this, I entertain little doubt of its truth, but fear the advantages that may be derived from the property are overrated. I have seen totara piles attacked by teredo within a year of their being driven; but usually from two to four years elapse before they are touched, and, if the bark is preserved intact, a much longer period: in fact, I have never seen the bark of any timber perforated by teredines. Heart of totara will resist the teredo still longer. In the Auckland Museum is a section of a Tasmanian blue-gum pile, taken from the wharf after having been driven six or seven years. The pile itself is closely perforated, but heart of totara cradle sections bolted to it have not been touched. When the sap-wood of totara has been thoroughly perforated, it sometimes happens that the teredo dies out, being unable to attack the heart-wood until it has been subjected for a longer period to the action of sea water, when the mollusc resumes possession, and the destruction of that part of the pile exposed to its ravages is a mere matter of time. The fine wharf at the Bluff Harbour, constructed scarcely ten years ago, already shows the substantial totara piles in many cases perforated to the heart. Still, no other native timber, except perhaps the puriri, has equal power to resist the teredo.

With regard to simple durability, the oldest totara piles yet driven in our wharves and piers are perfectly sound, whether below the mud level or above high-water mark—in short, where not actually exposed to the attacks of teredo. Piles driven in the Auckland Wharf have been drawn twenty years after being driven, when the portion below the mud-level was fresh and sound, even the bark undecayed; and wherever used for beams, girders, or stringers, the same durability is shown, even in the oldest works, wherever good heart timber has been used.

Totara piles in inland bridges exhibit earlier signs of decay: the sap-wood decomposes more speedily, and appears to affect the heart. In situations of this kind, it is of great importance to remove the sap-wood before the pile is driven; and the same remark applies when totara is used for house blocks. The heart-wood will last longer if the sap is removed before the pile is used.

On the Otago mountains, and, I believe, on other mountains in the South Island, are still to be found large numbers of fallen totara trees which must have occupied their present position long before the advent of settlers. Many of these logs are said to be sound and good after their protracted surface exposure, a far more trying test than would be afforded in most constructive works. I had the opportunity of examining a portion of one of these logs, which was quite sound, although evidently of great age.

It may be fairly estimated that kauri and totara afford more than two-thirds of the indigenous timber employed for buildings and constructive works in the colony. A concise summary of their comparative use and durability may, therefore, be considered of special interest.

Both are extensively used for general building purposes, and exhibit the same amount of durability; kauri, however, is easier worked, and takes a higher finish. Owing to the great abundance, in the kauri district, of puriri and manuka, which afford the most durable fence constructed in the colony, totara has been used to a far greater extent than kauri for fencing purposes, but without evincing greater durability. I am not aware that either timber has been tried on a sufficient scale to obtain average results as to their durability for sleepers; but, so far as known, the results are equal. For the timbers of constructive works, kauri has the advantage of greater strength coupled with equal durability, so far as tested. For piles for marine wharves, jetties, bridges, &c., totara stands alone. Kauri has been extensively employed in shipbuilding for many years, and ranks deservedly high for this purpose. Totara has been but sparingly employed, and I have been unable to ascertain with what results. Both timbers are extensively used in the manufacture of furniture. Lastly, both are found exposed from natural causes of remote date, and exhibit great durability under the varied and severe tests thus applied.

3. Matai—Black Pine.—(*Podocarpus spicata.*)

Found throughout the colony, but not in great abundance north of the Upper Waikato. It usually attains a height of from 50 to 70 feet, with the trunk from 2 to 4 feet in diameter, and affords a timber of great durability, used for a variety of purposes—piles for bridges, wharves, and jetties; bed-plates for machinery, millwrights' work, house blocks, railway sleepers, houses, &c., &c.

Great confusion has arisen from the crossing and misapplication of the common names of this and the next species, the miro (*Podocarpus ferruginea*), so that it has been often difficult to ascertain what timber was intended by either name, and obtain correct information, more especially as the two kinds bear a close resemblance after the timber has been in use for a time, and it is not easy for ordinary bushmen to distinguish the foliage. In the account of the Otago experiments on the strength of New Zealand timbers, matai is erroneously called *P. ferruginea* instead of *P. spicata*, although the latter is clearly the tree intended, as is evident from the description of the cross-section of the heart-wood. I am indebted to Mr. W. N. Blair, of Dunedin, for having cleared up any doubts I entertained of this, by showing me the fruit of what he considered the true black pine, which is clearly *Podocarpus spicata*, the tree with solitary fruit being the miro (*P. ferruginea*).

In Dunedin I saw large house blocks taken up which were perfectly sound after having been down upwards of fifteen years: weather-boards and flooring were good after having been in use twenty-five years—the weather-boards fully equal to totara and kauri. Several piles in the old jetty at Dunedin are sound after having been in use nineteen years. At Invercargill, two or three piles of a bridge near the railway station were drawn after being down nearly twelve years, and found perfectly sound throughout. In a situation in which the piles are exposed to teredines, at Port Chalmers, one or two specimens were much perforated, but sound above, after being in use thirteen years. Bridges in various parts of the colony afford similar proof of its durability, alike as regards piles, stringers, and braces; but it has been far more extensively used in the South than in the North, partly on account of its greater abundance in the former and the comparative rarity of totara.