

No. 4.

Mr. J. KNOWLES to Mr G. W. BLAIR.

SIR,—

Public Works Office, 26th September, 1871.

I am directed by Mr. Gisborne to draw your attention to the enclosed memorandum by Dr. Hector, in which he points out the importance of testing, from time to time, those woods that may be thought suitable for public works.

It is not desired that a collection of such woods should at once be made, but in calling for tenders it is considered advisable that, when practicable, tenderers should be asked to send in samples of the woods proposed to be used, of the sizes mentioned by Dr. Hector, and that they should afterwards be forwarded to the Museum at Wellington for scientific examination.

If in any other way opportunity should offer of forwarding Dr. Hector's views, especially in reference to doubtful woods, you would, by availing yourself of it, be advancing the public interest.

I have, &c.,

JOHN KNOWLES.

G. W. Blair, Esq., District Engineer, Dunedin.

[A similar letter to the above sent to Mr Bray.]

Enclosure in No. 4.

MEMORANDUM by Dr. HECTOR.

THERE is great confusion about the names of the birches, as they are called. Three species only exist as forest trees:—

1. *Fagus menziesii*.—This is in Wellington, red birch; Nelson, white birch; Otago, red birch.

2. *Fagus fusca*.—This is in Wellington, black or red birch; Nelson, red birch; Otago, black birch.

3. *Fagus solandri*.—This is in Wellington, black birch; Nelson, black birch; Otago, white birch.

In Canterbury, and the Amuri districts, the last-mentioned, *Fagus solandri*, is divided by the settlers into two varieties, one being called black, and the other white birch.

As to the quality of the different varieties, I find, after correcting the names that,—

1. *Fagus menziesii*, in Wellington, is classed with *F. fusca*, and is not useful. In Nelson, this wood is likewise not valued. In Otago, this species is considered the best of all the kinds, and, next to the Kauri, the best wood in New Zealand, for strength and durability.

2. *Fagus fusca* in Wellington, is not considered a valuable tree. In Nelson, it is considered to be better than No. 1., but inferior to No. 3. In Otago, is one of the largest timber trees in the country; wood, clear grained, splits freely, but is not so lasting, when exposed, as No. 1.

3. *Fagus solandri* is most valued in Wellington and Nelson, being used for fencing; the heart of the wood becoming exceedingly hard with age. The Waiiau-ua Bridge is said to be built of this timber, which was cut at Motueka, in Nelson. In Otago this wood occurs chiefly along the sides of the streams, among the mountains, and on the West Coast, and is considered worthless for anything but cooper work. The three species are easily distinguished by the leaves and bark together.

1. *Fagus menziesii* has a small heart-shaped, rigid leaf, with round notches; the bark, especially on the young stems, and small twigs, having horizontal bars like a cherry stem. In the old trunk the bark breaks into longitudinal furrows, and the horizontal marking disappears.

2. *Fagus fusca* has a thin membranaceous leaf of considerable size, and with sharp pointed notches. The bark is dark when young, and when old, very thick, rough, and of a dull red or brown colour.

3. *Fagus solandri*, always a white bark, unless when covered with a sooty coating, which appears to arise from disease. The leaves are small and with smooth edges.

The accompanying lithograph, nature—printed from the leaves of these three species of birch (figs. 1, 2, 3)—will illustrate the peculiarities by which they are to be recognized.

The Miro (*Podocarpus ferruginea*) fig. 4, and the Matai (*P. spicata*) fig. 5, are also contrasted, as trees which are not properly distinguished in the selection of timber, the latter being much more valuable than the former.

The Manoa (*Dacrydium colensoi*) fig. 6, one of the most lasting and invaluable timbers in New Zealand, has also been given for comparison with the Kawaka (*Librocedus donianus*), fig. 7, (which is a worthless wood for out-door work,) as in one stage of its growth the leaves of the former resemble those of the latter, and I find that they are both occasionally called "cedar," a name which should be applied only to the Kawaka.

Only three samples of birch belonging to the two species *Fagus menziesii* and *F. fusca* were tested by the late Mr. Balfour, and the result shows that the estimate of the relative value of the woods of the two species tested is in favour of *F. fusca*, grown both in Wellington and Otago, as against *F. menziesii* grown in Otago.

It would be most advantageous if samples, not only of the birch woods, but all other timbers which are likely to be used or suggested for use in the public works in different parts of the Colony, were collected under the superintendence of the District Engineers, or other qualified persons, and forwarded, along with specimens of the leaves (and flowers if possible), to the Colonial Museum, where they could be tested and preserved for reference. An average section of the trunk of a well-sized tree should be sent in each case, not less than 2 feet in length, and in large trees about one-fourth of the tree, taking care to preserve the bark, and to keep the specimen bound together with iron hoop.

Samples of sawn timber of each tree should also be sent, such as pieces of scantling or boards, showing the ordinary form in which it is found in the market, and which should be the samples tested.

The appended extract from Mr. Balfour's report, shows that he did not consider that his inquiry had exhausted this most important subject, and, at the time of his death, he was engaged in collecting the material for instituting a fresh investigation.

In the meantime, I would suggest that Mr. Allen should be requested to forward a specimen of the wood and leaves of what he calls the black birch.

13th September, 1871.

JAMES HECTOR.