

Extract from Mr. Balfour's Tables, page 474, &c., of Jurors' Report of New Zealand Exhibition, 1865.

	Fagus fusca.		Fagus menziesii.
	Wellington.	Otago.	Otago.
A. Weight of cubic foot	50.90 lbs.	44.43 lbs.	38.99 lbs.
B. Greatest deflection in inches, elasticity remaining uninjured	49 in.	54 in.	65 inch.
C. Greatest weight carried with unimpaired elasticity ...	100 lbs.	116 lbs.	73 lbs.
D. Deflection in inches at instant of fracture	2.2 in.	2.37 in.	2.55 in.
E. Length of a beam 12 in. deep and 6 in. broad, supported at both ends, which will just break with its own weight	230.57 ft.	268.64 ft.	233.4 ft.
F. Breaking weight at centre of a beam 20 ft. clear span (supported at ends), reduced to a uniform weight of 20 lbs. per lineal foot, and having the proportion of depth equal twice breadth	10.5 tons.	15.3 tons.	12.3 tons.

Extract from Mr. Balfour's Report in Jurors' Reports of New Zealand Exhibition, 1865, page 468.

"New Zealand woods are certainly for the most part short in the grain, and break with little warning, though there are a number of valuable exceptions; but it will be observed that the ratio of safe load to breaking weight is high, which to a great extent compensates for this peculiarity.

"The table indicates the probability that black and red birch will be largely used for public works in future, as they grow to a very large size, and possess many valuable properties.

"It is certainly desirable that all the experiments should be repeated and verified on a larger scale, and it is to be hoped that the General Government will take such steps as to be in a position to undertake to test all samples which may be forwarded to them for the purpose from any part of the Colony.

"Another point which calls for further investigation, is the proper season for felling timber, about which little is known.

"In countries where the winter is more severe, it is generally considered that the best time to fell timber is in mid-winter, when the trees are almost entirely free from sap, and the last formed wood has to some extent consolidated; but the next best period is considered to be about midsummer, after the foliage has been fully developed, when the tree appears to rest before commencing the formation of wood—at which time also it is remarkably free from sap. Spring and autumn are the worst seasons for felling. As, owing to the mildness of the New Zealand winter, trees, except at considerable elevations, never entirely cease to grow, it may probably be found that mid-summer is the best season for felling in this Colony; but the subject requires and deserves a thorough investigation, there being few questions which could be taken up by the Colonial Government with a better prospect of ultimate public benefit.

"When the proper season for felling has been ascertained and adopted, and when more attention is paid to the important question of careful seasoning, it will probably be found that the New Zealand woods will give even higher results than those in the tables."

No. 5.

Mr. W. N. BLAIR to UNDER SECRETARY, Public Works.

SIR,—

Dunedin, 6th October, 1871.

I have the honor to acknowledge receipt of your favour of the 26th ultimo, directing my attention to the subject of making a thorough investigation into the character of native timbers, and in reply, to state that I shall have much pleasure in doing all I can to forward the inquiry, especially as it is a subject in which I am very much interested. Indeed I began some months ago to collect information for the same purpose, but on account of other engagements, have not been able to get much done.

As it is not intended to make the inquiry a matter of business, but one to be prosecuted as opportunity offers, I would suggest that it be extended to native building materials of all kinds—timber, stone, clay, limes, and cements. Our information on the subject of limes is very limited, and, as it is the most important element in engineering works, it demands the greatest attention. In connection with this I would like to know Dr. Hector's opinion as to whether any of the volcanic earths of New Zealand possess the same properties as the natural cements of Italy and France.

If the investigation is extended, as above indicated, I would suggest that residents in the country be invited to contribute specimens of the various materials, but such contributions must be confined strictly to the *useful*, otherwise the inquiry will become too extensive.

It will also be necessary to adopt some general arrangement under which the information should be collected.

I have, &c.,
W. N. BLAIR,
District Engineer.

The Under Secretary for Public Works, Wellington.