REPORT

ON

THE STATE OF THE PUBLIC BUILDINGS

BY

THE COLONIAL ARCHITECT.

PRESENTED TO BOTH HOUSES OF THE GENERAL ASSEMBLY, BY COMMAND OF HIS EXCELLENCY.

WELLINGTON.

1872.

REPORT ON THE STATE OF THE PUBLIC BUILDINGS, BY THE COLONIAL ARCHITECT.

SIR,— Colonial Architect's Office, 11th July, 1872.

Following your instructions, I have the honor to report that I have, within the last few days, made an examination of the state of the public offices in Wellington, on which I performed a similar duty in 1870.

I have now to add further details and comparisons with my former reports, which I intend should be read with the present one, and for which purpose I attach copies printed at the time, and presented to both Houses of the General Assembly. *Vide* Parliamentary Paper, D.—No. 6, 1870.

On this occasion I saw no necessity to survey the walls of the buildings, which are composed of sound and durable timber.

Commencing at the north-west angle of the block, I used the same means of testing the rafters as in 1870; and in order that Government may be able to trace the rapid spread of dry rot, I will give the results, side by side, of the tests on fifteen consecutive rafters, with the interval of two years between them:—

No. 1.	Rafter of	white	pine.	In 1870	sound,	in 1872	dry rot.
„ 2.	„	„	„	„	sound,	„	dry rot.
„ 3.	„	„	„	„	sound,	„	dry rot.
„ 4.	„	„	„	„	dry rot,	„	dry rot.
„ 5.	„	„	„	„	sound,	„	sound.
„ 6.	„	„	„	„	sound,	„	dry rot.
„ 7.	„	„	„	„	sound,	„	dry rot.
„ 8.	„	„	„	„	dry rot,	„	dry rot.
„ 9.	„	„	„	„	dry rot,	„	dry rot.
„ 10.	„	„	„	„	sound,	„	dry rot.
„ 11.	„	„	„	„	sound,	„	dry rot.
„ 12.	„	of red	pine.	„	sound,	„	sound.
„ 13.	„	of white	pine.	„	sound,	„	dry rot.
„ 14.	„	of red	pine.	„	sound,	„	sound.
„ 15.	„	of white	pine.	„	sound,	„	sound.

The above table shows that out of fifteen rafters two are of red pine and sound, and that of the remaining thirteen all are of white pine and only two of them sound.

It is still more important to note that two years ago ten of the thirteen were sound, thus showing that four-fifths of the timber has been attacked in that comparatively short space of time, and confirming the extract from Mr. Hales' report in mine of 1870.

In the roof over the House of Representatives, I find that out of ninety-two rafters twenty are of red pine and all sound, the remainder being of white pine, forty-four of which have dry rot, and twenty-eight are apparently sound.

Nearly all the ceiling joists are of white pine, and some of them very rotten, the specimen tested by Dr. Hector, and submitted herewith, being a piece cut from one of them.

The whole of the roof boarding and lining and about thirty per cent. of the floor joists are of white pine, more or less attacked with the rot.

The roofs over the portions of the buildings between the two Houses of Parliament, although composed almost entirely of white pine, are in better condition than those over the Houses, the proportion attacked being from eight to ten per cent.

I submit herewith four specimens of timber, two being portions of the ceiling joist before named, and having had their relative strength tested by Dr. Hector, the result cannot be considered other than alarming, seeing that while ordinary red pine stood a strain of 160 lbs. before breaking, the two pieces of ceiling joist under similar treatment gave way with the insignificant pressure of half a pound on each.

I attach Dr. Hector's memorandum, and beg to direct your attention to the last paragraph, wherein he states that a structure in the same state as this ceiling joist would give no warning.

In 1870 I estimated that in two years from that time the roofs and floors of these buildings would be unsafe, and I have no doubt, from the foregoing results, that my estimate was based on correct data, and that the time has arrived when the portions north and south of the central building are no longer trustworthy in their present condition.

In consequence, and acting on your authority, I have undertaken to strengthen the weakest points of the roofs by inserting, at intervals of ten feet, strong red pine rafters, to which will be bolted longitudinal purlines to support the old rafters.

The ceiling joists will also receive support by hanging them up to the purlines with iron rods.

This work will add considerable support to the old timbers, and will prevent such a sudden collapse as suggested in Dr. Hector's memorandum, even if all the timbers were in the state of the worm-eaten pieces tested by him; but it must not be overlooked that although some pieces may be in a worse state, the greater proportion of the white pine is better, and a few sound rafters of white and red pine remain and impart considerable strength to the structure.

The supports now being introduced can only be regarded as very temporary,—indeed, only patching up for the session; and in my opinion it would be very unwise to allow the roof to remain on for a longer period than six months.

They might, under favourable circumstances, hold together for several years; but, in the event of an earthquake or a south-east gale,—such as is frequently experienced in Wellington,—such a collapse as Dr. Hector suggests might occur.

Under these circumstances, I advise that the whole of the roof be taken off and reconstructed of proper materials, and all white pine taken out of the floors and elsewhere, as soon as possible after the Session is over.

The form of reconstruction is a matter of detail, which would depend on the requirements of the country or service, and would have to be considered hereafter.

I have, &c.,
W. H. Clayton,
Colonial Architect.

The Hon. the Colonial Secretary.

Memorandum for the Colonial Architect.

July 10, 1872.

The following is the result of experiments to test the four samples of wood submitted by you this day:—

Specimen marked A, remu, one quarter being sap wood, bore 150 lbs. with 1 in. deflection; strength unimpaired. Bore 100 lbs. with a deflection of $\frac{1}{4}$ in. Broke in the sap wood with 160 lbs.; deflection, 1·1 in.

Specimen marked B, white pine, rather inferior specimen, broke short with 25 lbs., 1·7 in. deflection. The usual breaking strain of this wood is from 55 lbs. to 85 lbs., according to the soil on which the tree grows.

Specimens marked C and D, white pine, much worm eaten, broke with $\frac{1}{2}$ lb.; no deflection. A structure of timber in this state would give no warning; and any strength it can have must depend on the thrust, and not the transverse strength.

James Hector.