The quantity of material to be removed by scour and dredging, for a channel with a bottom width of 300ft., and a depth of 14ft., at low-water spring-tides, from the staiths out to deep water, between the breakwaters, would be about 270,000 cubic yards, which would cost, allowing one-half for scour, £6,800. I have shown both the east and the west walls to extend further seaward than proposed by Sir John Coode. It may be found advisable in the first instance not to extend them to the full length shown, in which case I would suggest that they be stopped at the points marked MM on the plan.

Fretting of the River-banks.—The river-banks on the west side, for some distance above and below the Buller Bridge, and at the island, are fretting away through the action of the river during floods. As the half-tide wall will form little, if any, protection to the banks during floods, it will be found necessary to protect them. I would advise that this be accomplished by quarry refuse and small rubble of blocks, weighing from 1cwt. to 2cwt. Fascine work may be used with advantage where suitable, provided material fit for fascines can be procured within easy distance.

River Training-walls and the Bar.—I may mention that I do not anticipate any material improvement to the bar will be derived from the river training-walls. It is very probable that the scour, while dredging upstream, will deposit detritus on the bar, which will require to be removed by dredging or harrowing.

Entrance to the Proposed Floating-basin.—By curving the walls to the westward, the proposed entrance to the floating-basin would be effected, but I see no reason why the site of the basin should not be kept a little further upstream, with the entrance, approximately, as indicated by green colour I have shown, roughly, on the plan two positions for the floating-basin. That shown by green colour would not admit of much future extension without running dangerously near the high-water mark outside, while by keeping the line of dock more east and west, as indicated by blue, it might be considerably enlarged. The greatest drawback against curving the walls, probably, is that by so doing a portion of the existing half-tide wall on the east side would be rendered useless.

Railway Approaches.—I have shown on the plan the approximate positions of railway approaches. Should the wall be constructed by end-tipping, without staging, as proposed by the Board's Engineer, it will be necessary that the trucks be before the engine while tipping the rubble. This arrangement would also suit better in the event of tipping the wall from staging. I have therefore allowed for back-shunting to all the approaches. Where the work commences upstream of the tangent point on the wall I would propose that this portion, which in no case is of any great extent, be left until a sufficient portion of the wall below is built to allow of backing up the line. The steepest gradient would occur on the approach to the wall, above the Buller Bridge, amounting to about 1 in 37½. This, I consider, will be within the limit of a difficult grade for the purpose required. It will be seen from the plan that I advise the first 500ft. of the wall to be constructed at the level of full tide. This arrangement gives an easier gradient to the approach, and will afford more advantages to standing-room than if kept to half-tide level. Although the approach to the wall at Martin's Island would be liable to be blocked by logs brought down the river during floods, I think it should be completed, as this approach would be much needed with a view to expeditiously carrying out the work, and as a considerable portion—fully one-half—is already constructed. The approach to the detached wall upon the west side of the river, although necessitating the construction of nearly half a mile of line from the junction near the root of the west breakwater to the wall, will, I think, be found comparatively easy

Conclusion.—In conclusion, I must express my pleasure in acknowledging the attention I have received from Mr J J Moynihan, Chairman of the Board, Mr J A. Wilson, the Engineer, and Mr. Charles N Greenland, the Secretary, each and all of whom have rendered me every assistance during my inspection of the river, and the data in connection therewith.

I have, &c.,

The Chairman, Harbour Board, Westport. LESLIE H. REYNOLDS, C.E.

No. 23.

Notes by Mr J A Wilson, Jun., on the Reports on the Training-walls.

SIR,— Harbour Board Office, Westport, 28th June, 1892.

In pursuance of a resolution of the Board dated the 21st instant, I have given careful thought to the reports on the lines the training-walls should follow, prepared by Messrs. Bell and Reynolds, C.E.'s, and would submit the following notes thereon :—

Division of Walls into Sections.—For the purpose of considering the reports, the training-walls may be divided into three sections—namely, the upper section, along which the lines advised to be followed in both cases depart from the line as it appears on Sir John Coode's original design, and which may be said to embrace that part of the training-wall upstream from cross-section FF, the middle section, extending from cross-section FF to the mouth of the lagoon, throughout which length the proposals of both gentlemen follow, either on or very close to the original line, and the lower section, extending seaward from the mouth of the lagoon, where they again propose to diverge from the line as originally designed.

Consideration of Upper Section.—Taking the upstream section, and considering that first, Mr Reynolds has shown in green colour a line which he approves of, commencing 1,000ft. above the Buller Bridge, and trending downstream by easy curves till it joins Sir John Coode's line at cross-section FF This is the line Mr Reynolds would favour as likely to give the best results, in conjunction with dredging, defined on his plan, and estimated to cost £12,500. This line from the Buller Bridge downwards, is located a little to the eastward of the line proposed by myself, in connection with which it was not anticipated that heavy dredging would be entailed, as there was no idea of reducing the level of the river-bottom to Sir John Coode's grade-line by that means,