

more dredging for maintenance purposes will be necessary in the future than in the past."

Such being the case, I am forced to the conclusion that the reclamation area of 56 acres will only suffice for the reception of dredgings for little over 4 years (to be exact it works out at 4.7 years), instead of 8 years as before mentioned.

The question then arises would it not be more economical to abandon the scheme of reclamation and resort to the plan of dumping the silt into the sea 3 miles outside the heads.

Would it not be better to invest a portion of the money in steam tenders, so that the Fruhling dredge could be kept constantly at work? She is alleged to be able to raise 2,000 tons silt per hour, which if it were taken from her without delay by tenders, would enable her to earn (2,000 tons at 2.8 pence) £236s. per hour, whereas as a mere freight carrier of 1,428 tons in her hoppers and doing about three trips a day would only enable her to earn only £8 6s. per hour. Then as regards the time aspect of the question, she could dredge 18,000 tons per day of 9 hours with tenders instead of 4,284 tons without them. Working this out as regards the passage outside the moles and assuming that about 700,000 tons would have to be dredged to give 30 feet depth at low water, that could be done with the help of tenders in about 40 days as compared with 168 days if done by the dredge alone. And I work it out that 50 acres of the inner harbour could be dredged to 30 feet at low water in about 32 days jointly with tenders as compared with about 134 with the dredge single handed. This hastening to obtain deep water appears to me to be a very important matter as it would at an early date enable Lyttelton to be the last port of call for the largest steamers coming to New Zealand.

I claim no originality in opposing the reclamation of land as a method of disposing of dredging silt. It is condemned strongly by Mr. Cyrus Williams in his report dated 13th April, 1905, and again by Mr. Maurice F. G. Nelson, of the firm of Coode, Son & Mathews, in report dated 12th February, 1907.

But what appears to me to be the strongest argument against it is that it is **so short sighted**. When the area is filled are we to go on reclaiming? to the injury of this beautiful natural harbour by interfering with the tidal scour. I can, here again, appropriate quote Mr. Cyrus Williams in his report dated 8th May, 1903, as follows: "Any reclamation in the upper Bays beyond the Moles will have the effect of reducing the tidal capacity, and consequently the velocity of the tidal stream so rendering the maintenance of the channel between Lyttelton and the sea more difficult, a work which will be found costly enough as it is, consequently I would not be in favour of this way of disposing of dredgings were it apparently profitable to do so."

I have, therefore, to respectfully request that you will bring this letter under the serious consideration of your Board.

I have the honour to be, Sir,

Your obedient servant,

JOSHUA LITTLE.

This letter was treated by the Board with contempt, and not acknowledged or replied to. It therefore ranks with the Engineer's report as a protest against land reclamation, and the Board in ignoring these protests have taken a responsibility which they cannot throw off.

In my letter, calculations were supplied of comparative costs of the two systems based on the expected working results of the Fruhling dredge. I now do the same on separate sheets, but based on the actual working results as given in the Annual Report for 1912, and these show what an immense saving can be effected in depositing the silt at sea.

Almost any child could grasp my contention, because in reclaiming land you have your mole to construct—a lengthy, expensive operation—which incurs a charge for compound interest till it is finished, and then there is the cost of filling in—as yet an unknown item.

Whereas by depositing silt at sea it is simply carried there and falls out of the barge by gravitation when the doors of the floor are opened.

It is indisputably shown by these figures, which I supply at the end of the pamphlet, that in attaining a depth of 40 feet in the inner harbour and outer passage—by this means a saving can be effected of approximately £102,900, and by crediting the barge with the freight earned carrying the silt, her cost will be more than paid for.

I now proceed to reply to anticipated objections.

(1) It is alleged by some that it is unpracticable for the dredge to work alongside of the barge and pump silt into her. In reply, I say I have the evidence of experts that it is quite practicable, except in rough weather when the barge could then lie in the Inner Harbour and the dredge could pump the silt into her instead of into the reclamation area. There would thus be a loss of time incurred but no cessation of work. How often would that happen? However, during August it is stated in the Engineer's report that the dredge could not discharge silt into the area on account of the heavy wave action in the Inner Harbour, so that in each case the objection obtains.

But why all this argument? In the Annual Report for 1911 (Return No. 5) it states that "Dredging by dredge and two steam hopper barges was carried on from 1877 to 1890." That settles the question of practicability, and it must be noted that the cost of raising and depositing silt by that means works out at 4.35 per ton, as compared with the present cost of depositing into the reclamation area as shown by my figures of 6.25 per ton, which is less by nearly 2d. per ton, so it comes to this, that if it is a condition that the Fruhling dredge must so get rid of her silt as is done at present, then she is a robber and should be blown up by the suffragettes.

What results do we get from the two different systems?  
Answer: if we reclaim land with silt we get 70 acres at an approx-