Suggestion No. 2.

Priestman grab-dredgers, as before, but working on a piled staging outside the breakwater, following up the outer margin of shingle-accumulation to such extent as might be necessary, and discharging into trucks on staging alongside. The trucks to be run along staging and tipped into elevated bins or bin, on outer or inner side of breakwater and wharf, and the stuff to be taken thence by steam hopper-barge.

The reason for rejecting this suggestion was, the cost and inconvenience of trucking the stuff.

Suggestion No. 3.

Priestman grab-dredgers, working on piled staging as before, but discharging into an elevated bin, on harbour side of breakwater and wharf, by means of a band-conveyor, or pipe and water-jet.

This idea was given up, as we were unable to hit upon any means of making it work satisfactorily for moderate cost.

Suggestion No. 4.

Priestman grab-dredgers, working on piled staging as before, but discharging into side-tip trucks on locomotive line adjoining. The stuff to be thence carried by Government or separate railway to Dashing Rocks.

This plan has no doubt a great deal in its favour, but the frequent crossing of railway to shipping wharf would probably be an inconvenience, and the cost per ton dredged would be somewhat higher than the plan which we have recommended. Besides this too (and this applies to all the alternatives except the one which we have recommended) the appliances for this system could only be utilised to their full extent in one particular way; whereas the great bulk of the expenditure, for the system which we have recommended, would be on a vessel, which could be utilised in several different ways, both inside and outside the harbour.

Suggestion No. 5.

A pump-dredger, capable of lifting 400 tons of sand or gravel in an hour, working on piled staging, outside the breakwater, and discharging into an elevated bin at harbour side of breakwater and wharf. The stuff to be thence taken to Dashing Rocks by steam hopper-barge.

This is, we think, the best of all the alternatives considered, except the one which we have recommended. It would admit of a much smaller vessel (say, one of 150 tons, instead of 300 tons hopper-capacity) being employed, as it could get filled from a bin in a very few minutes, and could therefore keep on conveying stuff almost continuously, instead of intermittently with dredging operations intervening. There is, however, some objection in risking so expensive a machine on staging outside the breakwater, and the plant as a whole (as already mentioned) could not be utilised to the same extent, in various ways, as the plant which is recommended. Also, although the first cost of machinery, and consequent interest and depreciation, would be less than for the system which we have recommended, we doubt if the ultimate cost of work done would be any less, as there would be two machines to man, and keep going, in place of one.

Suggestion No. 6.

A pump-dredger, working on piled staging as before, but discharging direct on to the beach, in the vicinity of the Dashing Rocks, by means of a delivery-pipe, having a length of about 2 miles.

This, if it would act satisfactorily, would probably do the work required cheaper than any of the other methods which we have investigated. There is no certainty, however, that it would do the work required satisfactorily. Delivery-pipes of considerable length (we believe in some cases up to 2 miles in length) have, we believe, been successfully used in connection with pump-dredges, but the material dredged, in all such cases that we know of, has been fine sand. Whether or not equally satisfactory results could be obtained, with the character of stuff required to be dredged at Timaru, and how the cost of such dredging and delivery would compare, with the ascertained cost of dredging and delivering of fine sand, it is not possible to say, with the data at present at our disposal. The uncertainty about the matter generally is therefore so great, that we are not justified in recommending this process for adoption, in despite of its possible cheapness. As against this possible cheapness, too, there is the consideration, already alluded to, that the machinery thus provided could only work in one way, whereas the machine which we recommend to be procured, could work in many ways.

Suggestion No. 7.

A pump-dredger, working on piled staging as before, but discharging into side-tip trucks on locomotive railway alongside.

This idea has really nothing to recommend it, as the only object of railway line is to obviate difficulty of conveying stuff from staging to hopper-barge (or to elevated bin, on its way to hopper-barge) and, if a pump-dredger is employed on the staging, of course no such difficulty would arise. The cost of carriage by barge is cheaper than by railway, including, of course, in both cases, the cost of maintenance, repairs, and interest and depreciation, &c., so that it is only in the case where the cost of getting stuff from dredger to bin would be considerable, that the carriage-by-railway alternative seems to show any advantage at all. This statement, however, is subject to qualification to this extent: that, whereas it is not an absolute certainty that stuff can be placed by means of a steam-barge, in such a position, in the vicinity of the Dashing Rocks, that it will be thrown up on the beach, ready to be carried on by the waves, there is no doubt at all that stuff could be so deposited by means of side-tip trucks, working on a locomotive railway, in conjunction with a staging and shoots at the Dashing Rocks. There is, however, so very little doubt, as to steam-hopper acting satisfactorily in this particular, that we think such doubt may safely be disregarded.