Mole, £34,000; protecting slope, £4,000: total, £38,000. Mr. J. D. Holmes estimates the cost of mole and protection at £26,300. Neither our estimate nor, presumably, Mr. Holmes's, makes provision for extending the mole seawards, as suggested by Mr. Holmes, to form wave-traps to reduce the range in the Inner Harbour when the channel between the moles is widened.

DREDGING BASIN FOR INNER HARBOUR SOUTH OF THE IRON POT.

Messrs. Cullen and Keele provide for dredging out a basin 1,000 ft. wide. In considering the length to be dredged, we would point out that the work now in progress of reconstructing the wharf along the West Quay provides for the possibility of dredging only to a depth of 20 ft. below low water. Therefore to obtain a minimum depth of 30 ft. required for oversea vessels drawing some 26 ft., practically the whole of the dredging will have to be done on the south side of the old timber bridge, where a great deal of the area to be dredged is dry at low water and the remainder only has about 1 ft. 6 in. depth of water at low tide. (See Exhibit 77, borings by Hay and Rochfort.) Adopting the evidence that four berths will be required if lightering is eliminated, a minimum length of 2,400 ft. will be required. We estimate that the quantity of material to be dredged, giving a uniform depth of 30 ft. below low water at the berths and 26 ft. in the basin, as 2,700,000 cubic yards. Mr. J. D. Holmes, for two berths, makes this figure 1,221,600, which at his original estimated unit cost of 1s. equals £61,080. Before stating our estimated cost for this work we wish to point out that as some of the area is dry at low water, and that the greater portion of it has only a depth of 1 ft. 6 in. at low water, a dredger that can cut its own floatation would be required. The dredger "Kaione" as at present fitted is not suitable for this work, and before she could efficiently deal with same the whole area would have to be dredged to a depth of some 15 ft.—1,300,000 cubic yards. Unless the dredge were built on shore and launched into a specially prepared pond on the south side of the bridge, the only available starting-point would be on the north side of the timber bridge at the south end of West Quay. The depositing of this excavated material in the North or South Pond would be a troublesome and expensive undertaking, as, in addition to a shore pipe-line, which to fill the South Pond, even, would be some 1,600 ft., there would have to be a floating pipe-line up to a 1,000 ft. in length. Two other alternatives offer themselves; one is to fill the hopper of the dredge and then steam into the Iron Pot and discharge the material into the North Pond, and the other is to steam out to sea and discharge the material. As the Iron Pot would be a most awkward place to get into and out of during the flood and ebb tides, and as the cost of the disposal of this material for reclamation purposes by the pumping schemes cannot be estimated with any reasonable degree of accuracy, we must adopt the unit cost for depositing at sea; this we consider would be 1s. 3d. per cubic yard. For the remainder of the work to be done by the "Kaione" or other suitable dredger we use Mr. Holmes's original unit price of 1s. per yard. We therefore estimate the cost of this portion of the work at 1,400,000 cubic yards at 1s., £70,000; and 1,300,000 cubic yards at 1s. 3d., £81,250: total, £151,250.

In regard to the Breakwater Harbour the dredging is a simple matter, more particularly as it would not be necessary to do it until the breakwater was extended and the western mole completed. To provide 30 ft. at the berths and 26 ft. elsewhere, Mr. Holmes estimates that the quantity to be removed is 300,000 cubic yards, at a cost of £18,700. Our estimate for this depth is 317,185 cubic yards at 1s. 3d.—£19,824.

Inner Harbour.—Cost of dredging.

	Mr. Holmes.	Commissioners.
	£	£
Outer channel	61,500	104,575
Between moles	46,175	42,963
Basin	61,080	151,250
	£168,755	£298,788

Note that the above does not in either case include the cost of moles, or protecting sides of channel, or wave-trap. Neither does it include the dredging to the north-west of tide-deflector from West Bridge to harbour-entrance included in Cullen and Keele's scheme and estimated by Mr. Holmes at £42,500.

TABLE G.—MR. A. C. MACKENZIE'S ESTIMATED COST TO COMPLETE THE INNER HARBOUR AND PROVIDE FOUR BERTHS FOR OVERSEA VESSELS DRAWING 26 FT.

The following estimates are not submitted with any degree of assurance that they correctly represent the ultimate total cost of the Inner Harbour scheme as outlined by Messrs. Cullen and Keele. I have neither had the material nor the time to go into this matter in sufficient detail. Furthermore, by the time the whole of the evidence had been submitted the Commissioners were of the opinion that the financial position of the Board would not warrant its undertaking extensive harbour improvements for some years to come. It is therefore apparent that by the time a constructional programme could be adopted present-day estimates would be of little value. I am, however, confident that the various works estimated for would not at the present time, in the matter of cost, vary seriously from the amount of my estimate. The works I have estimated for are as outlined in the plan issued by the Harbour Board in the year 1919—*i.e.*, Plan A in Commission's Exhibit 3. I have adopted four berths for overseas vessels, and have provided for dredging the channel to 34 ft. to accommodate vessels drawing 26 ft. With the exception of the estimated cost of dredging, the cost of mole, and protecting 800 ft. of the channel between the moles, I have adopted Mr. J. D. Holmes's estimates for his two-berth scheme in arriving at my cost for four berths. The estimates I give are principally useful as a comparison in the cost of a