

that he does not think it would be possible to maintain such a trench, and that it would fill up again if not dredged out, which would be a troublesome matter. He does not agree with Mr. Holmes, sen., that maintenance dredging would not be required for three years after completion, and further states that his main objection is that it is inviting a calamity to make such a channel and invite shipping into it. Page 358: He says, "When I reported in 1909 I condemned the idea of an approach channel in the open sea. I have the same idea now. Nothing would induce me to change my mind in respect to the Inner Harbour. The effect of a wider and deeper opening would be to let sea of greater velocity into the Inner Harbour. If the channel was kept of uniform depth right through, the waves would not decrease as they reached the harbour."

Mr. T. W. Martin, Mech. Eng., and dredge superintendent to the Wellington Harbour Board, recounted his experiences with the dredge "Whakarire" when she was employed upon dredging an experimental patch of some 3 acres on the sandspit in 1911, which was started on 8th November and worked until 6th January, 1912. The material dredged during that period—approximately for two months—was 33,450 cubic yards. Upon numerous occasions the mooring-chains parted, and a good deal of delay took place, the dredge not being able to work, owing to the range and high winds. During the first day's dredging the tumbler-bushes were broken, and later on damage was done to the main gear mitre-wheel which necessitated a new wheel being sent for and fitted (see pages 359-364). Page 368: "Would not like to undertake the dredging of channel with 'Kaione.'" Page 364: "The tube is worse than the bucket, because it is rigid. I would say a bucket dredge was not the best for a job like the patch." Page 366: "It was hard work dredging with bucket dredger in patch." Page 622: "You would want actual experience there before you could express an opinion how any dredger would work." Page 623: "As I found things at Napier, I do not think that I could successfully load up a hopper. I would require to have a long stretch of experimental work to find out how I could best work a dredger—that is, any dredger—on the patch. I say the sand would never let me fill the hopper more than half to three-quarters full; three-quarters would be the maximum. That would increase the cost per load."

SUMMARY OF EXPERTS' OPINIONS.

Maxwell, Williams, and Mason: "We say that even if it were practicable to cut this channel, there is no doubt that in heavy weather it would be liable to be obliterated wholly or in part. It is quite impossible to estimate the cost of maintaining an unprotected channel through a sand-bar when, as stated, the channel is liable on occasions to wholly disappear." They consider a protecting mole would be required estimated to cost £120,000.

Mr. Marchant considers that a protecting mole on the eastern side of the channel would be required. On the estimate he gives of £206,000 for moles, the portion to protect the channel would in 1906 have cost £124,266, and the estimated cost of dredging would have been not less than £4,000 per year.

Mr. George Nelson states that the formation of the channel presents no difficulty whatever, and gives the quantity to be removed as 770,000 cubic yards.

Messrs. Cullen and Keele in their 1912 report state that they fully recognize that heavy breaking seas would tend to fill in the cutting, and that some maintenance dredging may always be necessary; but they consider it feasible to dredge and maintain an entrance channel. Estimated cost to dredge same to 35 ft., £12,900; annual cost of maintenance, £7,276. In their 1925 report they give the cost of dredging as £25,310, and annual cost of maintenance £12,000 per year.

Mr. Furkert in his 1924 report considers that it would be a comparatively easy task to dredge the channel, but that its maintenance would involve considerable expense.

Mr. R. W. Holmes considers that it would be difficult to get a full load (thereby increasing the cost), and that he has not the slightest hesitation in saying that, once the channel is open through, no maintenance dredging would be required for three years; the side slope he suggested being 1 in 5.

Mr. J. D. Holmes adopts a side slope of 1 in 3, and estimates the quantity of material to be dredged at 98,500 cubic yards and the cost at £61,500.

Messrs. Holmes and Son consider that the "Kaione" would be a suitable dredge for this work.

Mr. J. P. Maxwell considered that the channel, when dredged, would tend to shallow to the same depth as the surrounding area, and that he does not agree with the suggestion that no maintenance would be required for three years; and that he considers that the dredging of such a channel is inviting a calamity to shipping.

Mr. T. W. Martin, dredge superintendent, after having two months' experience with the "Whakarire" on dredging the site of this proposed channel, stated that he would require to have a long stretch of experimental work to find out how he could best work a dredge there—that is, any class of dredge.

Your Commission is of the opinion that the evidence of the experts examined is unanimous, that it is feasible to dredge the channel to a depth of 34-35 ft.

In regard to maintenance, the following five witnesses considered that maintenance dredging would be required of a costly nature: Maxwell, Williams, and Mason; Mr. Marchant; Cullen and Keele; Mr. Furkert; and J. P. Maxwell. R. W. Holmes considered that no maintenance dredging would be required for three years. The following either did not express an opinion or would not commit themselves on this subject: G. Nelson, J. D. Holmes, T. W. Martin.