

referring to the channel between the moles, "You should run a narrow cut through the boulder-bank—not a very wide one, but a deep one—say, to 33 ft. or 34 ft. at low water. You do not want to endanger the existing timber works, but such a cut as to show the nature of the bottom." Neither of these things was done. It is true that the reason is that the dredging-master tried to do the suggested work on the "patch" in the bay and found it physically impossible to do so in the conditions that obtained, while the navigating officer of the "Whakarire" refused to risk her in the channel between the moles. When he sought to work on the outer channel, wind, sea, and ocean swell operated to reduce the actual dredging-time to about 30 per cent. of the working-time, and to reduce seriously the efficiency of that dredging-time. As to dredging between the moles, the dredging-master in his evidence said most emphatically that he could not have dredged in the channel between the moles. The evidence shows that the dredging-master did his best, and is not to be blamed for the abandonment of the project; but these facts never seem to have been put before Messrs. Cullen and Keele when subsequently they were asked to report on the feasibility of opening and maintaining the outer channel.

Then again, Mr. Ferguson, at the beginning of his conference with the Board, was asked whether he would recommend dredging for the purpose of securing data *before the Board considered the question of seeking further professional advice* to report on the merits of the two harbours. His answer was "Yes," and he stated, "It is not a matter of grave urgency (that is, the building of your harbour). Dredge 10 acres at least; sound it again and again; leave it for *twelve months at least*, sound it carefully again; if results are not conclusive perhaps it will be necessary to dredge again and sound again."

Again the Board's policy of vacillation and intolerance of expert opinion seems to dictate its actions. Mr. Ferguson's excellent advice was given on the 9th July, 1911. The dredge "Whakarire" was chartered and began her work on the 8th November, 1911, and on the 20th December, 1911 the Board wrote to two Australian engineers, E. A. Cullen and T. W. Keele, Ms.Inst.C.E., asking them to visit Napier and advise the Board upon the best means to be adopted for carrying out certain improvements by dredging. They came, and on 14th March, 1912, they met the members of the Board at Napier, and were forthwith asked to enlarge the scope of their inquiry so as to embrace (*inter alia*) the feasibility of developing the Inner Harbour to accommodate ocean steamers *on the lines already proposed*. Mr. Jull in his evidence on page 8 described what took place in the following words: "Mr. George Nelson's Inner Harbour scheme was also submitted to them." Thus less than eight months after receiving Mr. Ferguson's advice, and having in the meantime undertaken the sadly curtailed dredging experiment, the only lesson from which was that the dredge had experienced grave difficulties in trying to dredge on the site of the channel, the Board is back again at the old quest for an engineer or engineers who would approve the Inner Harbour "on lines already proposed" by Mr. George Nelson. There is no trace anywhere in the reports, correspondence, or the evidence tendered before us that Messrs. Cullen and Keele were ever informed of the experiences of the "Whakarire;" whilst the dredgemaster of the vessel, Mr. Martin, in giving evidence before us, said, "Messrs. Cullen and Keele did not in 1925 apply to me as to my dredging experiences. I saw them in 1912 and they asked me some questions about dredging in Napier. As far as I can recollect there was no very pointed reference; that was just a casual conversation." There is no evidence before us that Messrs. Cullen and Keele were ever informed of the important fact that the dredgemaster of the "Whakarire" had found the bottom of the sea on the point where he dredged to be composed of a fine sand, so light and fine that it came up in the buckets in a liquid mixture that tended to go overboard as fast as it was poured in to the dredge's hopper.

Messrs. Cullen and Keele reported in August, 1912. In brief, they reported that both harbour schemes, Inner and Breakwater, were practicable. They considered there was no proof of the sand-drift that Messrs. Maxwell, Williams, and Mason deemed to be a critical feature when considering the feasibility of cutting and maintaining the outer channel, and they concluded that it was feasible in the first place to dredge, and later, by dredging, to maintain, that channel at a depth that would allow ocean-going steamers to use it and enter the Inner Harbour thereby. Their conclusion was, "It will be seen therefrom that we consider that a satisfactory harbour can be obtained by developing the Inner Harbour on the lines indicated at the cost given in the estimates. We have also shown, as requested, what we consider should be done to complete the Outer Harbour scheme to an extent sufficient to satisfactorily meet the present and those future requirements that may reasonably be expected, and have furnished our estimates of the cost thereof."

Some correspondence then passed between the Board and Messrs. Cullen and Keele, and on the 20th November, 1912, a cable was sent to Messrs. Cullen and Keele in the following words: "*Although Harbour Board has arrived at decision upon your report, they desire, for information of ratepayers, to whom proposals must finally be submitted, that you kindly give Board your straight-out opinion as to whether the breakwater or Inner Harbour is the better proposal for Board to adopt. Kindly cable joint reply.—JULL.*" On the 25th November Messrs. Cullen and Keele replied, "We advise adoption of Inner Harbour proposal in preference to breakwater scheme.—CULLEN AND KEELE." (The italics above are ours.)

The Board adopted this recommendation and the recommended scheme, and in 1914 a Bill was submitted to Parliament seeking authority to construct the Inner Harbour, and for that purpose to borrow £300,000. That Bill was passed, becoming the Napier Harbour Board Empowering and Loan Act, 1914. Messrs. Cullen and Keele's scheme included an embankment defining and enclosing the Inner Harbour on its south and western sides. The site of this embankment was agreed upon in consultation between them and the Harbour Board and the Engineer-in-Chief for Public Works for the Dominion. An agreement was arrived at whereby the embankment which was necessary for the Inner Harbour should be so placed as to situation, and so constructed, as to serve the purposes also of a railway embankment to carry the East Coast Railway northwards from Napier, and an embankment