

evidence, especially as in the knowledge of one of the Commissioners, and by the weight of sworn evidence, the principal navigable channel was in olden times along the north bank. Until the commencement of the River Board's operations there seems little doubt that the northern channel, or a combination of the northern and middle channels, was still the best route.

In 1911 a combination of landowners to the south of Mercer formed a drainage association with the object of endeavouring to reclaim their swamp land, which lay so low that even with a very moderate rise in the stage of the river they were submerged. Contingent on their operations also hung the question of the draining of some thousands of acres of Crown lands in the Whangamarino and Maramarua district. This association very soon found that it required more extended power to enable it to deal with the question satisfactorily, and took steps to form a River Board. About the same time they employed a Mr. Breakell to make surveys and devise a scheme of river-improvement which would attain the object sought. Unfortunately, later investigations have shown that the work done by Mr. Breakell was inaccurate, and it led the River Board to assume that results could be obtained which a more complete knowledge of the facts leads one now to suppose are practically impossible. Before commencing on their scheme of operations the Board obtained the services of Mr. Mowatt as Resident Engineer, who made a survey of the islands in the river and projected a system of groynes with the assistance of Mr. Breakell's data.

(NOTE.—Although throughout this report and the evidence the structures erected are referred to as "groynes," they really partake more of the nature of training-walls. They consist of long rows of white-pine piles, in some cases attached by wire and wattled in between with willows. In the upper ones the piles were about 8 ft. apart, and in some cases short spurs were attached at right angles to the main run of the river. At the lower ones, in the open bay, the piles were at approximately 2 ft. centres, and there are no willows. No plan of these structures was produced, and the Board's overseer stated that the type was varied at his discretion. At the present time the works cannot be considered as in a satisfactory state of affairs.)

Mr. Mowatt's plan was submitted to Mr. Kennedy as Consulting Engineer to the Board, and he approved the same with some modification, and the matter was then referred to the Marine Department and an enabling Order in Council obtained. It has now been shown that the plan prepared by Mr. Mowatt was extremely inaccurate, and that the work had not been carried out in accordance therewith, either as regards the type, number, position, or extent of the groynes. In connection with its operations, no doubt in consideration of the fact of relief being promised to Crown lands, financial assistance towards the works to the extent of approximately £2,500 was given by the Government. The balance of the funds expended, some £6,000, was obtained by a loan raised on the security of the lands included within the River Board's district.

In addition to the reach of the river dealt with in the Order in Council, the Board has also proceeded up-stream a distance of two miles, and on this part of the river erected an almost continuous line of works, for which it obtained no legal sanction.

Navigation.—Here it would be as well to explain how the improvements of navigation came to be included within the scope of the Board's operations. The Board found by the advice of its engineers that their works were likely to result in improved navigational facilities, and, no doubt with the object of obtaining further popular support, have laid increasing stress on this navigation question as time progressed, whereas at the inception of the Board navigation was entirely subordinated to the question of drainage.

Reference—Clause 1.—Necessity for Groynes.

1. (a.) In our opinion the groynes are not necessary for the protection of the banks of the river.

1. (b.) Although some groynes, if properly placed so as to provide a channel of sufficient width, should eventually tend to improve navigation, the structures as at present placed and built are not satisfactory.