

entirely by scour and to deposit on the bar and in other portions of the harbour the material which Sir John Coode intended to be removed principally by dredging, and incidentally to narrow the navigable channel opposite the wharves. It appears from this report that Sir John Coode had concurred in the suggested removal of the proposed floating basin from the western side to the eastern side of the river.

31. In 1891 the last 35 ft. of the western breakwater was stated (upon a plan—one of the records of the Board) to have been constructed at a cost of £119 per foot, including staging.

32. The best result obtained from the action of the breakwaters on the bar was shown in 1890, but in consequence of subsequent shoaling in 1892 Mr. Napier Bell reported on the position, and he recommended that both breakwaters should be extended, the western wall by 600 ft. and the eastern wall by 1,000 ft., thus making the end of the walls coterminous, in place of the form recommended by Sir John Coode, where the western wall overlapped the eastern wall by 400 ft.

33. Mr. Leslie Reynolds also in 1892 reported on the harbour-works and principally upon the training-walls, and in 1893 Mr. Reynolds again reported upon the result of scour at the staiths that had been produced by the construction of the upper portion of the half-tide training-wall on the opposite side of the river. He proposed to modify the alignment of the wall in order to remove the current, which was objectionable as being set across the river on to the staiths, but none of the recommendations of Mr. Reynolds were adopted by the Board.

34. In 1896 Mr. Napier Bell reported especially upon the extra depth ruling outside the ends of the breakwaters due to a recent heavy flood, and the occurrence of a shoal a couple of thousand feet further out; and in order to deal with this shoaling repeated his previous recommendation that the ends of the walls should be made coterminous by the extension of the eastern breakwater by 400 ft. He also recommended an extension of the west half-tide training-wall by 700 ft. down-stream to assist in the removal of a bank of shingle which had formed in the channel below the mouth of the western lagoon. In the same report he estimated the cost of the construction of the floating basin at £90,000, but at the same time he recommended that its construction would be premature, as the danger to shipping expected by Sir John Coode and others from floods and drift logs had not been realized as the result of experience. Mr. Bell also specially called the Board's attention to the silting up of the west lagoon owing to the declaration by the Government of Bradshaw's Creek as a sludge-channel.

35. In 1898 Mr. Napier Bell again reported upon the general condition of the harbour, and repeated his previous recommendations that the east breakwater should be extended out to and beyond the western breakwater. He pointed out a possible danger to navigation by this extension, but suggested that if experience showed that this danger existed the previous condition might be restored by a similar extension of the western breakwater. He also recommended further extension down-stream of the half-tide training-walls, and the raising of the eastern breakwater above the half-tide level to that of the staging so as to avoid the necessity of restoring the staging, which was then perished. Mr. Bell again warned the Board that the loss of tidal area through the silting-up of the west lagoon would be detrimental to the harbour.

36. In 1900 Mr. Napier Bell again repeated his advice as to raising and extending the eastern breakwater.

37. In 1901 Mr. Napier Bell made a general report on the condition of the harbour, and again repeated his advice as to the permanent raising of the eastern breakwater to 12 ft. above high water, and its extension by 600 ft. He also recommended that one of the Board's hopper barges should be fitted up as a sand-pump dredge for use in the river and so arranged as to deliver spoil ashore, and suggested that it could be employed to dredge the proposed floating basin, and warned the Board to prevent alienation of lands adjacent thereto. So far as we are aware this is Mr. Napier Bell's final report on the Westport Harbour works.

38. The Board tried the experiment advised by Mr. Napier Bell of pumping up sand, and as a result of the experience thereby gained in 1902 ordered a sand-pump hopper dredge, the "Rubi Seddon," which was delivered in 1903.

39. By 1907 the raising of the eastern breakwater had been completed, its extension for 400 ft. was in hand, the construction of the floating basin had been