1881.

NEW ZEALAND.

THE HARBOURS OF NEW ZEALAND

(FURTHER REPORTS ON, BY SIR JOHN COODE, C.E.).

[In continuation of H.–19.]

Presented to both Houses of the General Assembly by Command of His Excellency.

WAIROA RIVER (HAWKE'S BAY).

SIR,— 5, Westminster Chambers, London, S.W., July, 1881.

After inspecting the Port of Napier, and when proceeding therefrom in the s.s. "Hinemoa," Captain Fairchild, to Gisborne, in Poverty Bay, I called off the Wairoa entrance, but found the surf on the beach too heavy to admit of landing in any boat belonging to the steamer without serious risk: moreover, if I could have effected a landing it was considered by no means improbable that, during the time requisite for an inspection of the tidal compartment of the river, the surf might have increased to such an extent as to prevent my embarking again even for several days. In view of the necessity of my leaving for England within a week from that time, such an occurrence would have prevented my visiting either Gisborne, Tauranga, or the Thames, all of which I was able to accomplish before reaching Auckland.

Shortly after our arrival Mr. H. Williams, Secretary to the Wairoa County Council, came off in a pilot-boat, accompanied by the Maori pilot David Jones, who had acted in that capacity for about six years previously

By means of information obtained from Captain Fairchild and the pilot, and also from Mr. Burton, Chairman of the Wairoa County Council, and from Mr. Williams, I was enabled before leaving New Zealand to frame a memorandum showing the character and extent of the data (in the shape of a plan, sections, &c., &c.) which would be requisite to enable me to study this matter in all its bearings.

A complete and evidently very accurate survey, with sections, probings, and current observations, in accordance with my memorandum above referred to, has been made by Mr. Edgar Jones and forwarded to me. For convenience of study, I have had all the information thus supplied rearranged and condensed, and send herewith the plan portion, which is sufficient for the purpose of illustrating this report.

The pilot Jones stated that on three or four occasions within the previous six years, during which he had been in charge, he had known as much as 20 feet of water in the entrance after a "fresh." Captain Fairchild informed me that in the year 1863 he found about 18 feet of water at high water at the Wairoa entrance, and that this depth did not vary greatly for a period of two years. The navigation of the Wairoa entrance is however evidently subject to great fluctuations, seeing that, according to Mr. Williams's statement, the river, on the average of years of late, has been open only to steamers of very small draught—about 4 or 5 feet—for about nine months out of the twelve, although it had on some occasions been known to remain open for two or three years continuously

In a memorandum kindly furnished by Mr. Burton when I was in the colony, it is stated that the bed of the river immediately within the gravel-bank, and for a considerable distance above it, has been much raised of late years by the deposit of mud brought down the river by freshets. I may remark that the sections of the river-bed certainly appear to substantiate this view, and may add that some facts mentioned by Captain Fairchild serve to show that this deposit has become so tenacious that it is very doubtful whether the scouring action of the currents will alone suffice to restore the former depth.

The observations of Mr. Edgar Jones have established the fact that the normal current on the ebb-tide runs out at the rate of 4 knots per hour, and that the flood runs inward at the rate of 1½ knots per hour. As was remarked to me by Captain Fairchild, the Wairoa, in this respect, differs from the rivers on the west coast of the South Island—which I had then recently visited—inasmuch as at the Wairoa there is stated to be a strong ingoing current on the flood-tide for at least half the year, and during a great part of the remaining six months the inward current runs at a moderate rate during the flood-tide.

Having regard to the remarkable character of the material of which the beach is composed—namely, of small particles, round in shape, and very uniform in size, and, consequently, very easily moved—and bearing in mind that the entrance is exposed to the full force of the ocean swell, it will be obvious that, under these conditions, the mouth of the Wairoa, so long as it remains unaided by