

the Main Road, where the dredging operations finished some years ago. These improvements consisted mainly of the removal of timber from the section between the Main Road and the East Coast Railway, whilst farther south several bends were eased off, and in other places the banks cleared of growth, and in a few cases short diversions were made at very bad bends in the stream. Farther east the drain on the boundary of Sections 14 and 15, Block II, Waihi South, was deepened as much as the culvert under the railway-line would allow.

A considerable amount of timber was found in all these drains, necessitating a free use of explosives, but now that timber has been removed drains are in first-class order. Drains have been cleaned when found necessary, but so far this is a comparatively small item, but during each successive year this item must increase.

The summary of the works completed during the year is as follows:—

					M. ch.	Cub. yd.
Canals dredged	..	..	..	..	3 58	164,527
New drains	..	..	..	..	6 25	19,038
Widening and deepening drains	..	..	..	..	6 18	
Cleaning drains	..	..	..	..	3 27	
Clearing road-lines	..	..	..	..	3 24	
Carting and spreading spoil on roads	..	..	..	..		7,339

During the year a ballot was held for seven sections fronting the Main East Coast Road, and at least twenty more sections, varying from 20 acres to 50 acres in extent, should be available for selection next spring, provided the ballasting of the Tainui Road can be carried out during the coming winter.

The major works proposed to be carried out during the coming year are as follows: (1) Completion of the deepening of the Wharere Canal; (2) straightening of the Pongakawa River; (3) ballasting of roads, particularly the Tainui Road; (4) extension of drainage-system on to area between Wharere Canal and Pongakawa River.

When the Priestman dredge (No. 5) reaches the estuary an endeavour will be made to increase the tidal influence for both the Wharere and Pongakawa. Should this be successful, the drainage of a large area of the swamp will be much more easily accomplished. The total expenditure during the year was £11,673. Of this amount £3,973 was expended in day labour (including dredges) and £2,640 in piecework contracts.

The officer in charge is Mr. R. G. Macmorran, Land Drainage Engineer. The local officer on the works was Mr. R. L. Innis. This officer was transferred to the Rangitaiki works at the end of the year, and has been succeeded by Mr. D. S. B. Heather.

#### POUKAWA DRAINAGE AREA (13,567 ACRES), HAWKE'S BAY COUNTY.

Construction-work on this swamp has been held up for some years now owing to the dispute with the Native owners of portion of this area.

The dredge pontoon, which was constructed in 1916 and has been in the water ever since, must now be showing signs of deterioration, and unless work is commenced shortly it would be advisable to dismantle this pontoon and dispose of the timber for what it will fetch.

The rainfall at the site of the works was 24·81 in., which is below the average in spite of a heavy fall of 6·82 in. in January.

The expenditure for the year was £97 17s. 8d., which was entailed in paying the wages of the caretaker and a few incidentals.

#### HIKURANGI DRAINAGE DISTRICT (50,000 ACRES), WHANGAREI COUNTY.

Development-works in connection with the above project were commenced in December, 1921, and since then these works have gone steadily forward. The work in hand comprises the diversion and lowering of the Wairua River bed at a point known as "The Rapids," situated some seven miles below the swamp. The diversions, of which there are four, are of a total length of 65 chains, and the material to be excavated consists of a substratum of rock, with an overburden of rock boulders and clay. Summer water-level at the point of completion is 18·5 ft. above summer level at the point of commencement, and the work will result in the summer level of the river above the diversion being lowered by 12 ft. This advantage will later be carried up into the swamp proper by removing all shallows in the river and cutting off all bad bends.

The works are not designed to absolutely prevent flooding—the costs of such a work would be quite beyond the financial capacity of the area—but they are calculated to reduce the frequency and duration of floods to such an extent as to enable the country to be successfully farmed.

*Cut No. 1.*—The top stripping of this cut was completed before the end of last year. The substratum of rock, rock-boulders, and clay proved very difficult to economically break out, and necessitated a more liberal use of explosives than was at first anticipated.

Considerable working-time was lost owing to flooding, and in order to minimize this trouble in the work ahead it was decided to cut the top off the falls situated some distance down-stream and to excavate the cut to a depth of 4 ft. below grade. The extra excavation required somewhat delayed the date of completion of this particular cut, but this will be more than recovered as the work proceeds up-stream. This cut is now completed, and the water in the lagoon at the top end has been lowered by 11 ft., leaving the old channel high and dry.