

The following figures show the principal works carried out: New drains cut, 1 miles 21 chains; drain-cleaning, 10 miles 68 chains; dredge cuts, 3 miles 23 chains, new stop-banks, 1 mile 23 chains; repairs to stop-banks, 1 mile 42 chains; willow-clearing, 30 chains; spoil excavated by dredges, 138,900 cubic yards; spoil excavated by scoops, 11,000 cubic yards; flood-gates erected, 8; pile bridges erected, 3; sill bridges erected, 8; river-diversions, 8.

The dredging of the Awanui River is the most important undertaking in hand in this area, and during the latter part of the coming year this work should be expedited, as the dredge now operating in the Tangonge Lake will have completed that work, and will then assist in the river improvements. This, as well as the construction of the Whangatane spillway, will be pushed on as fast as possible, so that the deepening of drains to the final levels can be carried out.

Works Expenditure.—The total expenditure for the year was £15,230, the principal items being—day labour, £6,113; piecework contracts, £2,368; and hire of teams, £658.

The works are carried out under the supervision of Mr. R. G. Macmorran, Land Drainage Engineer, the officer in local charge being Mr. T. S. McMillan.

WAIHI DRAINAGE AREA (22,720 ACRES), TAURANGA COUNTY.

The development of this scheme has been considerably advanced during the year, two new American steel dredges being put into operation on the Pongakawa River, and work on the subdivided Crown area being pushed vigorously ahead.

Priestman dredge No. 5 has been engaged in deepening and removing silt from the Wharere Stream from the Main Road northwards towards the Waihi Estuary, and at the end of the period was well down towards the northern boundary of Section 28, having covered a distance of 211 chains and removed 91,875 cubic yards of spoil. Ample fall into the Wharere Canal is now available from the Main Road as far as the Tainui Road, and advantage is being taken of this to deepen existing outlet drains.

The erection of American steel dredge No. 25 took longer than was anticipated, owing to the difficulty of putting up a strange plant without adequate working-plans, and also on account of many smaller parts not fitting, new bolt and rivet holes having to be drilled. However, this plant commenced operations on the upper end of the Pongakawa River, a few chains north of the East Coast Main Trunk Railway, at the end of June, 1922, and fairly good results were at once obtained. Many minor breakages incidental to the working of a new dredge took place, and for some time a considerable amount of timber was encountered, but latterly this has practically disappeared. Towards the end of 1922 plant was running well, and a very satisfactory yardage was being recorded each month. Owing to the soft peaty nature of the swamp and the high water-level in the cut the side spuds sink down to their full extent, and difficulty has been found in raising them preparatory to shifting ahead. The resultant heavy strain has caused several breakages on the spud-ball, and several methods have been employed with the object of diminishing this strain, the latest idea being apparently satisfactory. During the eight months worked this plant removed 55,314 cubic yards of spoil over a distance of 62½ chains.

As soon as dredge 25 was completed, in June, 1922, the erection gang was transferred to the mouth of the Pongakawa River, and work on dredge 26 was commenced. Progress was satisfactory, and plant started dredging operations in hard sandy country towards the end of October, 1922. Good results were obtained until the beginning of February, 1923, when the crank-shaft of the six-cylinder engine carried away, and dredge was then laid up for two months waiting for new shaft, and later for new spud-ball to replace one transferred to No. 25.

During the four months worked a total of 24½ chains was completed, some 17,338 cubic yards of spoil being removed. This dredge is bringing up 8 ft. of water at low tide, and as the excavation is mainly through very hard sand, which is always difficult to shift, progress for some time will necessarily be slow. However, when the softer going is reached the dredge will have good high banks, and should proceed at a much faster rate.

The following table shows the amount of spoil dredged and costs per cubic yard for the last six years:—

					Cubic Yard.	Cost per Cubic Yard.
1917-18	..	..	..	..	55,538	4.57d.
1918-19	..	..	..	..	20,780	7.67d.
1919-20	..	..	..	..	44,250	9.29d.
1920-21	..	..	..	..	63,495	7.77d.
1921-22	..	..	..	..	77,535	6.17d.
1922-23	..	..	..	..	164,527	6.97d.

Both road and drain work on the subdivided Crown area between the Wharere Canal and the Kaikokopu Stream have been pushed on rapidly, and by the end of the period the Kaikokopu Road was completed for 47 chains, Tainui Road for 31 chains, and Arawa Road for 54 chains, in addition to which fascines have been laid along a further 80 chains of Tainui Road, and spoil from large drains on either side of road distributed evenly over a width of 20 ft. down the centre. The ballasting of these roads with spoil has been expensive, as all spoil has had to be carted in drays from ballast-pits, which are situated in each case at one end of the roads in question. A new drain was constructed along the northern boundary of Sections 35 to 38, whilst the Punene and Arawa road-drains have been deepened.

South of the railway-line the Punene and Wharere drains have been deepened and widened, and the Mangatoetoe Stream has also been completed to the southern boundary of Section 8, Block VIII, Maketu Survey District. Certain improvements were carried out to the Kaikokopu Stream, south of