

The following is a brief description of the principal works carried out during the year :—

DREDGES.

Only three land dredges have been in commission during the year. All the floating dredges have been idle. The year's total quantity of machine-excavated material was 164,046 cubic yards.

The following table shows the total quantities excavated each year by the dredges during the past sixteen years :—

Year.					Cubic Yards.	Cost per Cubic Yard.
1920-21	..	..	..	..	158,865	7·42d.
1921-22	..	..	..	..	246,022	7·29d.
1922-23	..	..	..	..	440,092	8·20d.
1923-24	..	..	..	..	508,654	7·27d.
1924-25	..	..	..	..	822,286	5·86d.
1925-26	..	..	..	..	856,653	6·32d.
1926-27	..	..	..	..	647,182	7·42d.
1927-28	..	..	..	..	652,413	7·32d.
1928-29	..	..	..	..	619,911	6·54d.
1929-30	..	..	..	..	595,565	6·25d.
1930-31	..	..	..	..	536,692	8·32d.
1931-32	..	..	..	..	390,611	7·99d.
1932-33	..	..	..	..	200,954	8·00d.
1933-34	..	..	..	..	116,224	5·96d.
1934-35	..	..	..	..	52,517	10·02d.
1935-36	..	..	..	..	164,046	8·26d.

No. 15 Bucyrus excavator, after completing the construction of the embankment roadway and back-filling around the site of the Kerepechi Block pumping-station, has been engaged on the construction of the Reservoir Canal and subsidiary drains leading to the pump-suction chamber. This machine requires a thorough overhaul. Interruptions for the purpose of carrying out running repairs have been frequent and have been the cause of the unusually high unit-cost. Using a half-yard Page bucket and operating with a 50 ft. boom, this machine handled 47,920 cubic yards in 197 working-days at a cost of 10·5d. per cubic yard.

No. 16 Bucyrus excavator has been employed since November, 1934, in the Patetonga District widening and deepening the Waikaka Canal. Along the lower reaches of this canal the work was delayed by frequent floods, but when working above the flood plain good progress was made. This machine has also been operating with half-yard bucket and 50 ft. boom, and the total output for 229 working-days was 61,844 cubic yards at unit cost of 6·92d.

No. 19 Dredge was laid up during the months of March, April, May, and June, 1935, when the 100 ft. timber boom and superstructure had to be renewed. During the nine months the machine was in commission it has been engaged widening and deepening the Piako River Channel and building stop-banks with the spoil. Material excavated from the river-bed has to be transported 200 ft. and built into a substantial stop-bank. These operations are carried out by the dredge with one handling of the material at a cost of 7·35d. per cubic yard.

The machine operates on the drag-line principle, using a 1-cubic-yard-capacity bucket. The total output for 173 working-days was 54,282 cubic yards.

KEREPEEHI DISTRICT.

The drainage-pumping station for the Kerepechi Block, commenced in 1934, was practically completed in July, 1935. The erection of the steel-frame pump-house and pumping-machinery occupied the first four months of the fiscal year under review. The performance of the 33 in. centrifugal pump under acceptance tests carried out in June, 1935, are given hereunder :—

Static Head, in Feet.	Discharge, Gallons, per Minute.	Pump, Revolutions, per Minute.	Water, Horse- power.	Electricity, Horse- power.	Overall Efficiency.	Brake Horse- power at Pump- shaft.	Pump, Efficiency.
					Per Cent.		Per Cent.
3·92	28,500	155·25	33·90	82·8	40·9	73·4	46·2
3·87	28,800	156·00	33·77	82·5	40·9	73·2	46·1
3·77	28,900	154·80	33·01	79·1	41·7	70·2	47·0
5·10	25,900	155·20	39·98	74·2	53·9	65·8	60·7
5·91	24,950	155·10	44·73	78·1	57·3	69·3	64·6

Before the pump had been connected with the drainage system, a rainfall of 3·02 in. in about twelve hours on the 20th July, followed by a fall of 1·07 in. during the following day, caused some flooding on the Kerepechi Block. No. 15 Bucyrus excavator, by working continuously for sixty hours, was able to connect the drainage system of the 2,000 acre occupied block with the pump. Twenty-four hours' pumping, assisted by some sluice-gate action, was then required to empty the drains.