

During the summer, fires have caused more trouble than has been experienced since a fire district comprising the peat lands was constituted in 1933. During the four years that the fire district regulations have been in force there has not been one instance of fires getting out of control where the fire regulations have been observed, and this fact is conclusive proof that with the willing co-operation of all the settlers the fire risk and heavy annual cost of fire-fighting can be considerably reduced.

The works carried out by the Drainage Branch now fall into two general categories :—

- (1) The reclamation of swamp lands by flood protection, drainage, and the construction of access roads.
- (2) The preparation of waste lands for settlement by pasture establishment, stocking, the erection of farmhouses, buildings, and fences, and the provision of water-supplies and other amenities.

The first of these has been in progress since the inception of the Hauraki Plains scheme; the second has in the past been associated with small-farm-development schemes outside the Hauraki Plains district. This year the foundation has been laid for a progressive scheme of pre-settlement development of the Hauraki Plains lands, with the advantage of a planned long-term programme of work.

The number of men employed on the works controlled from the Kerepeehi office have varied between 156 and 207, and these figures do not include extra labour employed for short-term seasonal undertakings such as drain-cleaning. Most manual labour operations are carried out under the co-operative contract principle, with very satisfactory results to the Department and the workers concerned.

The following is a general review of the works carried out during the year :—

DREDGES.

One floating dredge and three drag-line excavators have been in commission during the year, and the combined output of these machines was 261,347 cubic yards. One item that seems worthy of mention is the successful refloating of No. 2 Priestman dredge. This plant was engaged almost continuously from the inception of the Hauraki Plains reclamation works in 1908 until 1932, when, to preserve the timber pontoon, it was purposely submerged in the Maukoro Canal. To dock this dredge on the slip at Kerepeehi would have necessitated dismantling the machinery and superstructure to pass the pontoon under a concrete highway bridge at Waitakaruru, and also the removal of a temporary dam controlling the water-level in the canal to prevent bank-caving. After thirty years' exacting service, the pontoon of this dredge is still sound, and the machine will shortly be put into commission on the Maukoro Canal. This canal extends inland several miles from the shore of the Hauraki Gulf at Waitakaruru. Below spring-tide level the canal is excavated in alluvial soil underlying peat originally varying in depth from about 1 ft. near the coast to 25 ft., six miles inland. As the result of drainage provided by the canal this peat has considerably subsided, and No. 2 dredge will be used to deepen the upper three miles of this canal, and at the same time provide a continuous alluvial-spoil bank above the peat which will eventually be used for a roadway, but will in the meantime provide support for a bank-operating drag-line excavator to be used deepening the canal as the banks subside.

No. 23 steam dipper dredge was engaged deepening the Awaiti and Elstow Canals from April, 1937, to March, 1938, when the dredge was laid up and the crew transferred to No. 2 Priestman dredge. The dipper dredge removed silt accumulated as the result of upstream dredging in the Awaiti Canal above the temporary dam at peg 6 miles 30 chains, and deepened the Elstow Canal for its entire length of 5 miles 35 chains. This canal is excavated in soft peat, and movement of the canal banks and bottom will necessitate periodical redredging until the peat consolidates. The output of this dredge for the year was 71,024 cubic yards and the unit cost 7·65d.

No. 15 Bucyrus drag-line excavator has been engaged enlarging the Reservoir Canal leading to the Kerepeehi Block pumping-station. This work is nearing completion, and the machine, after overhaul, will be used on the Piako River improvements works upstream from Kerepeehi Wharf. While widening the Reservoir Canal an effort has been made to smooth and shape the spoil-banks with the machine so that implements can in future be used to control growth of noxious weeds. The drag-line operating with a 50 ft. boom and half-yard Page bucket excavated and placed 56,757 cubic yards of material, at cost of 6·5d. per cubic yard.

No. 16 drag-line excavator has made good progress on the Maukoro Canal, which it is enlarging. Working along the left bank, the canal has been widened and the canal side road completed to peg 3 miles 74 chains, where the excavator crossed the canal on the temporary dam and has since worked downstream on the right bank to peg 2 miles 23 chains. Three operations will be necessary to complete the canal-widening and road-construction on the right bank. The approximate finished dimensions of the Maukoro Canal will be: Top width, 80 ft.; depth, 10 ft.; bottom width, 20 ft.; and the roadway along the right bank is to be placed to leave a space 75 ft. wide between the canal and road for spoil from maintenance dredging. Using a half-yard bucket and 50 ft. boom, this machine handled 69,021 cubic yards at unit cost of 5·86d.

No. 29 drag-line excavator has done excellent work. During the first seven months of the year it was employed raising the Waitakaruru Stream and Canal stop-banks. On the completion of this work, by arrangement with the Hauraki Plains County Council, the machine was used to remove silt from one mile of main drains of the Miranda drainage system. Mounted on a trailer, the machine was taken by road to Orongo, where it has since raised 59 chains of stop-bank on the foreshore of the Ngataipua Block. Operating a $\frac{3}{4}$ -yard bucket and 30 ft. boom, the very creditable output of this excavator was 64,545 cubic yards, and the average cost 2·78d. per cubic yard.