

recorders have now been established at the mouth of each of the three rivers, and another is projected on the Rangitaiki at Te Teko. When the survey is complete an accurate picture will be obtained of the present contours of the area and also of the future contours after subsidence of the overlying peat has taken place.

During the year, four drag-line excavators were employed in the Rangitaiki district and were engaged on maintenance of, and improvements to, main drains, canals, and rivers. These machines have now seen many years of service, and as difficulty is being experienced in keeping them in repair much time is lost in overhaul and replacement of worn parts. As soon as new plants become available at least two of these machines should be replaced with up-to-date equipment. The following are details of the work completed by each machine:—

*No. 17 Monigan Drag-line Excavator.*—This machine was previously employed on the Awaiti Canal, and travelled from there to the Rangitaiki River, where the plant was laid up for two months for urgent repairs. A start was then made with widening and battering back a bad convex bend on the left bank of the Rangitaiki River near Thornton. On completion of this work the plant was again laid up for three months while heavy machine parts were being made and installed to replace worn equipment. The excavator then travelled south and commenced work on the next convex bend shortly before the end of the year. When this work is completed at about the end of May, 1946, it will be necessary to move this machine to the other side of the river. This will be a costly undertaking, as it will involve complete dismantling, carting of the parts by truck, and the reassembling on the new site. Despite the delays occasioned by overhauls, this plant handled 26,980 cubic yards of spoil during the year.

*No. 30 Bay City Excavator.*—At the commencement and towards the close of the year this plant was engaged in cleaning, widening, and deepening the Tarawera Western drain and removing portion of old bank for a distance of 474 chains. The machine was also used on the urgent work of bank revetment and stop-bank improvements on the left bank of the Rangitaiki River south of Edgecumbe, where it placed 5,148 cubic yards of material on 24 chains of stop-bank and loaded 1,500 cubic yards of spoil on to trucks for the same purpose. It was then taken to the Awakaponga Quarry to load trucks with rock for the bank revetment work mentioned above. Other work done by the machine included the removal of 2,650 cubic yards of spoil in the cleaning of 48 chains of Central Drain and the preparation of site and the driving of piling for a new flood-gate in eastern drain. The output for the year totalled 26,953 cubic yards.

*No. 32 Ruston Bucyrus Model 10.*—The principal work carried out with the plant was the cleaning, widening, and deepening of the Western Drain for a distance of 132 chains, working northwards from the point 60 chains south of McLean's Road. On the right bank 14,880 cubic yards of spoil was excavated and placed in a medium level stop-bank. Other works carried out with this machine included improvements to 59 chains of the Kopeopeo West Canal and right-bank stop-bank working up stream from the Thornton-Whakatane Main Road, repairs of flood damage on the White-pine Drain and on the Te Rahu Canal south of the railway, cleaning of 12 chains of the Eastern Drain in the same locality, assisting with the river-bank revetment work on the Rangitaiki River south of Edgecumbe, the cutting-back of two convex bends on the right bank of the river south of Edgecumbe, and the excavating of a spillway and placing of spoil over the new flood-gate at the north end of Eastern Drain. The total spoil handled by this machine for the year was 36,735 cubic yards.

*No. 33 Ruston Bucyrus Model 17.*—This machine has been working northwards in building a stop-bank on the left bank of the Te Rahu Canal from the Rotorua-Whakatane Main Highway, and by December had completed to the Whakatane River. This bank has been made very substantial, being about 10 ft. wide on top and 3 ft. above flood-level. Included in the work was the filling of a breach in the canal-bank caused by a previous flood, and this entailed the carting with trucks of 4,692 cubic yards of spoil. In January a start was made with improvements to the Whakatane River left stop-bank, working down-stream from the Te Rahu Canal, but shortly after commencement a complete breakdown of the plant occurred and necessitated a complete overhaul