

This race will have a capacity of 900 cusecs at the intake, and gradually diminish in capacity as the various requirements are satisfied, but will still have a capacity of 450 cusecs at the South Ashburton River crossing. The first demand on this race will be 350 cusecs for the Ashburton-Lyndhurst scheme now under construction.

The outstanding features of the work are the large amount of earthwork—namely, 1,750,000 cubic yards—and the large reinforced-concrete structures which will be required to carry the water over six rivers along the route.

PROGRESS.

Work commenced on 8th December and an up-to-date self-contained camp has been established to accommodate fifty-five workmen and staff and provide workshop facilities for the maintenance of plant. The camp is provided with a water-supply, electric light, and a recreation-hall.

Suitable plant is now on order to cope with the large volume of earthwork mechanically, and the plant already in use consists of one large elevating-grader operated by a 100 h.p. Diesel tractor.

Under favourable conditions this latter plant item has delivered an output of 250 cubic yards per hour.

When all the machinery arrives it is anticipated that an output of earthwork approximating 65,000 cubic yards per month will be maintained.

The amount of race-excavation already completed is 37,000 cubic yards in two months' working. The permanent survey of this race has been completed for 10 m.

Levels Plain Irrigation Scheme.—This scheme is now almost completed and is ready for operation during the coming season.

The total work completed is as follows: Race-formation, 49 m. 35 ch. comprising—Diversion race, 1 m. 22 ch.; main race, 5 m. 44 ch.; and laterals and distributaries 42 m. 52 ch.

The work remaining to be done is the construction of No. 7 lateral.

The scheme will command an irrigable area of 12,800 acres, and in addition to the 149,000 cubic yards of earthwork involved will contain 612 concrete structures which are completed and forty-eight additional structures on the No. 7 lateral at present under construction.

The scheme was officially opened on 16th December last, but as the season had so far advanced no water was used for the past season, which was a favourable one for natural moisture.

Downs Water-supply Scheme.—Considerable investigation work has been carried out with regard to a proposal to supply domestic and stock water to a large undulating area of rich land in the vicinity of Timaru.

The area covered by the proposal is approximately 153,000 acres situated in the Levels County and portions of the Mackenzie, Geraldine, and Waimate Counties.

Negotiations are now in progress to set up a water-supply area, so that the financial arrangements, maintenance, and operation can be finalized before the work proceeds.

CANTERBURY IRRIGATION INVESTIGATIONS.

Topographical Survey.—Owing to the shortage of staff it was not possible to extend the topographical survey of North Canterbury this year.

Stream-gauging.—Continuous records were obtained from all installed stations during the year. A gauge-house was erected at Lake Heron, and the gauge is being installed.

A gauging weir and instrument house is under construction in the North Ashburton Gorge, and will shortly be completed and the gauge installed.

Sites for water-level recorders have been fixed on the Ashley, Hurunui, and Waiau Rivers, and instruments will be installed during the coming summer.

Observations of the depth of ground-water were recorded weekly at all the installed stations, and observations continued in regard to rainfall penetration.

Soil Moisture and Rainfall.—Observations of soil moisture and rainfall have been continued as follows: Ashburton County, at fifteen stations; Levels County, at four stations; Redcliffe Irrigation Scheme, at eight stations.

Evaporation.—Records of evaporation, wind, humidity, and temperature were continued at the following stations with the following results:—

Station.				Evaporation to 30th June.	Wind Mileage.	Period.
				Inches.		
Temuka	..	..	..	29·26	7,800	1 year.
Blenheim	..	..	..	42·49	16,890	1 year.
Ealing	..	..	..	33·50	6,583	From— 25/8/36.
Methven	..	..	..	40·00	26,167	8/9/36.
Pendarves	..	..	..	30·60	14,115	6/10/36.
Kirwee	..	..	..	13·52	11,620	2/2/37.

The last four stations were in operation from the dates shown.

Soil Surveys.—Studies of field capacity and wilt point have been continued.

Rainfall Run-off.—Six long-period automatic rainfall-recorders were installed in the high country of the North Ashburton River drainage area at elevations ranging from 2,000 ft. to 6,000 ft., and satisfactory records are being obtained.