

Ferry Bridge as the "Lower Taieri," and from Henley Ferry Bridge down to the sea as the "Lower Taieri Gorge." The Waipori River from its source down to the Dunedin City Corporation electric-power dam will be referred to as the "Upper Waipori," from the power-dam down to Sawmill Creek as the "Middle Waipori," and from Sawmill Creek down to Waipori Lake as the "Lower Waipori."

PHYSICAL CHARACTERISTICS OF THE RIVERS AND LAKES.

The physical features of both the rivers with their tributaries and the lakes have been so fully described in previous reports that your Commissioners feel it is unnecessary to again refer to them, except incidentally and where necessary later on.

FLOODS.

In connection with floods and the question of flood-discharge, tidal influence and its effect on flood-discharge, silting-up of the river and lake beds, your Commissioners endorse the conclusions arrived at and expressed in the report of the 1917 Commission, which, briefly stated, are as follows:—

- (a.) That a flood-discharge of 50,000 cubic feet per second in the Taieri River at the Outram Gorge represents a big flood, and one that is only rarely exceeded. This quantity, under very exceptional circumstances, may be augmented to the extent of about 10 per cent. by a simultaneous flood in the Silverstream drainage area.
- (b.) That a high tide accompanied by a south-east wind has a considerable effect in retarding the flood-discharge through the Lower Taieri Gorge, and as a consequence ponding up the flood-waters in the Waihola and Waipori Lakes and their vicinity.
- (c.) That a very considerable silting-up of the river and lake beds has taken place since the start of mining operations on the Upper Taieri and its tributaries and the Upper Waipori, and that this silting is most noticeable in the Taieri River between Allanton and Henley, and in the Waipori River and lake-bed below Sawmill Creek.

The estimated flood-discharge of the Waipori River referred to in the 1917 Commission's report requires to be modified, as a few months after that report was made a flood occurred in the Waipori River which was estimated to be 20,000 cubic feet per second. This your Commissioners regard as the largest flood that need be considered.

The trouble on the Taieri Plain may be said to be of a threefold nature. Firstly, the plain is covered in times of heavy flood by the hitherto unsuccessfully controlled waters of the Taieri River itself. Secondly, the Waipori River, bringing down large quantities of detritus, and being almost entirely unregulated, has caused a great deal of trouble in the Berwick district; and, furthermore, has actually contributed very largely to the waters lying on the plain, the levels on the plain being such that waters from the Waipori, if uncontrolled, may run from the vicinity of Berwick up the plain for many miles. Evidence of the flood of May, 1917, showed that before the waters of the Taieri River itself had invaded the low country lying along Lee Creek and Kirk's Road the water from the Waipori had covered a considerable portion of this area. Thirdly, the Silverstream itself, by discharging into the Taieri above Allanton, may augment the flood-discharge in the latter river. It also does a certain amount of damage by itself, by flooding and washing shingle on to the low area adjacent to the point where it joins the Taieri.

The very low area which lies at the mouth of the Silverstream has always acted as a kind of reservoir, which has to a large extent mitigated the effects of floods below Allanton, for the reason that as soon as the flood below the Outram Railway-bridge rises sufficiently to top the banks, either natural or artificial, the waters pour into the depression surrounding and including the swamp at the bottom of Duke's Road, and consequently reduce the peak of the flood farther down the river. Until all this area is filled up to levels corresponding with the flood-slope, conditions below are improved, provided that the peak of the flood coming from up-country does not occur after this regulating-area is filled. If, on the other hand, the peak of the flood occurs after this area is filled, this storage reservoir has no effect either in