the normal flow of the river is retarded to a serious degree by the contraction of the channel, so that the ordinary level of the stream is raised, and insufficient room is left for the additional waters brought down in times of flood; also by the presence of the willows the velocity of the flow is decreased, with the sequel that the flood-waters rise to greater heights than they would have done in a natural state. The floods therefore overflow the banks at all low places, and, by backing up the artificial drains and creeks, flow over the adjacent lands, which in many cases are below the level of the lands of the actual river-bank.

Overflow Awaiti Lagoon.—Netherton floods.

There is an overflow to a serious extent at a swamp on the west side of the river, some couple of miles south of the Tirohia Railway-station: the waters top the low bank, and run across the low lands into the Awaiti Lagoon and Creek, which are tributary to the Piako River. When the Piako is in flood—which probably occurs at the same time as the Upper Waihou is in flood—these surplus waters, being unable to drain to the Piako, flow over low-lying lands at the back of Netherton, flooding these lands, and finally find their way into the Lower Waihou near Netherton. These floods, were they of short duration, would be of but little detriment to the farming lands covered, as any silt they may bear would be of an alluvial character, and not likely to do harm to the lands flooded; but, owing to the increasing frequency in numbers, the matter is a serious one to the farmers affected, and must be provided for.

Synchronous floods.

The floods in the Upper Waihou sometimes occur in conjunction with those in the Ohinemuri, when caused by easterly weather; but the Upper Waihou floods are often the result of westerly and northerly rains, which do not affect the Ohinemuri so much.

Ohinemuri watershed.

The Ohinemuri River, which is the only important affluent of the Waihou, has a comparatively small watershed of about 90,000 acres, contained in a basin in which it rises, and in which the Townships of Waihi and Waikino are situated. It flows in a generally westerly direction, having a rapid fall from Waihi through the gorge in the main range of hills known as Karangahake (where the Talisman and Crown Mines are situated), and debouches below Mackaytown into the flat lands on which Paeroa partly stands, and thence has an extremely tortuous course until it joins the Upper Waihou at the Junction.

Waihi basin.—Excessive rainfall.—March, 1910, flood.

The basin in which Waihi lies has an exposure principally to the eastward, and Mr. H. B. Devereux, the Meteorological Observer at Waihi, in his evidence, in giving the mean annual rainfall at 83½ inches, explained that this unusually large fall—more than double that of the adjacent plains through which the Waihou flows—was due to moisture-laden winds from the east, or Pacific Ocean, striking the high lands surrounding the Waihi basin, causing a sudden condensation, and deposit of rain with great rapidity. The rainfall observations show that at times it is quite torrential in character—as, for instance, the fall immediately prior to the heavy Ohinemuri flood of the 30th March last, when 14 inches of rain was recorded as having fallen in sixteen consecutive hours at Waihi. The Ohinemuri, at the eastern mouth of the Karangahake Railway Tunnel, then rose to some 14 feet higher than was shown by any previous record, and swept down from its upper reaches large volumes of mining tailings which had been the accumulation of many years, flooding the Township of Paeroa, and covering lands to a height and extent that had previously been unknown, leaving on fertile lands a considerable volume of tailings and slimes.

Ohinemuri willows.

Like the Upper Waihou, the banks of the Ohinemuri have been permitted to be overgrown with willows, with similar detrimental results; but, whilst the Upper Waihou has only had to carry down a moderate amount of sands in