

- “(c.) To report your opinion as to what matters, if any, should be adjusted by legislation; and
- “(d.) Generally, to report your opinion on all matters arising out of or touching the premises, including the question as to whether or not one or more competent authorities shall be appointed to control the whole or any portion or portions of the said rivers, and what statutory powers should be possessed by such authority.”

The Governor-General's Commission also required us to report separately in respect of each river.

INVESTIGATIONS MADE.

Sittings, Evidence, and Inspections.—Your Commissioners made a preliminary inspection of the river on the 3rd July, 1919, and on the 5th idem held a sitting of the Commission at Rangitata, when ten witnesses were examined. Subsequently your Commissioners discussed the state of the river with the District Engineer, Public Works Department, Christchurch, and the District Engineer, New Zealand Railways, Christchurch. The Engineer to the Ashburton County Council was also interviewed by your Commissioners with the object of ascertaining the past conditions of the river at the Arundel Bridge, which was visited and examined by your Commissioners. The County Engineer advised that the County Council had no records of the original bridge, or of its extension (approximately in 1883), nor any plans of the structure as it was partially rebuilt about twelve years ago, nor any plans or information of the bridge as it exists at the present time. Apparently a bridge was built in the early “seventies” and suffered damage in 1876, after which heavy protective works were erected at both ends, but in 1878 these were washed out and the bridge rendered unusable. Negotiations for its re-establishment extended over several years, it finally being decided to extend the bridge all the way to the North Terrace, which work was completed in 1883. In 1899 one of the cylinders disappeared in a flood; it is not known whether it broke off or was entirely undermined. A number of the 3 ft. cube blocks are now lying several chains down-stream; these were part of the protective works erected in 1876.

On the 10th July, 1919, your Commissioners paid a visit to Rangitata Island, and met and discussed flood-levels at Rangitata Bridge with the Bridge Inspector and ganger of the Railway Department, both of whom had an intimate knowledge of the Rangitata Bridge since its erection, the former having assisted at its construction. The ganger reported having seen the water washing the railway beams at one or two spans, the transoms being submerged. (NOTE: The District Engineer, New Zealand Railways, Christchurch, expressed the opinion that this statement was probably a gross exaggeration. However, it was the evidence of an actual eye-witness. He may have called the top of the splash the flood-level.) In support of the ganger's statement, though not absolutely conclusive, your Commissioners found silt in the interstices of the transoms in question. It is possible that this might have been transported by wind. The current strikes the piers, especially at the south end of the north bridge, at an angle of 45° , and it is in this locality that the high level has been recorded, the level at the north end being many feet lower. Silt was found on the lower caps 5 ft. below the railway level on the second span from the south end of the north bridge. The fact that the bridge is not at right angles to the axis of the river (of the North Branch particularly), and also the fact that the river itself does not run parallel to its banks, but frequently at a very sharp angle thereto, no doubt accounts for the apparent anomalies in the flood-levels observed at various points on the bridge, which is a very long one. Another point which makes evidences of flood-marks hard to reconcile is that the levels of the river-bed alter very much locally, though on the average over the full width of the river there appears little alteration. Flood-marks indicate that the river rises several feet in flood-time, while one paint mark on a pile, which was shown to your Commissioners as the height of the 1918 flood, was only 14 in. above the water-level in that vicinity at the time of our inspection. It is quite evident that an alteration