

1877.

NEW ZEALAND.

THE SURVEYS OF NEW ZEALAND

(REPORT BY THE SURVEYOR-GENERAL ON).

Presented to both Houses of the General Assembly by Command of His Excellency.

The SURVEYOR-GENERAL to the Hon. the SECRETARY for CROWN LANDS.

SIR,—

Wellington, 7th December, 1876.

Having now finished my examination of the various Survey Offices of the colony, I have the honor to lay before you the following report. In order to save time, with the concurrence of the several Superintendents, I proceeded to inspect the offices of Canterbury, Marlborough, Nelson, and Westland, before they came under the charge of the General Government.

PREFACE.

As instructed by you, while I was at Christchurch I reported on the state of the Survey Office there, and at Timaru directly, to the provincial authorities; and though I shall have to go over the same ground here in regard to these, yet, as I had at that time to confine my remarks to the local aspect of the subject, I have found it now necessary in some measure to recast my notes, in order that they be made suitable in their proper connection in relation to other offices. My notes are unavoidably technical, involving much dry detail of office arrangement and matters of routine; but, I submit, to pass over these would be to keep back the grounds on which I rely for support in the measures of alteration that I shall propose before concluding.

As my inspections have been at various intervals extending over several months, I believe it will be better to give extracts of my journal, accompanied by the notes that I made on the spot: this will clear the way for entry on the general principles on which I propose to conduct the professional and practical operations of the department.

I left Wellington on the 28th July last, arriving at Christchurch on the next day, and I commenced my examination of the Survey Office there on the 31st. In my inquiries I was assisted by Mr. S. Hewlings, the Chief Surveyor, who gave me every facility.

CANTERBURY SURVEYS.

My first attention was directed to the Initial Station of the Foundation Surveys of Canterbury, and Mr. Hewlings informed me that this was situated on Mount Pleasant, an eminence above the harbour of Lyttelton. The true bearing from thence to Cooper's Knob was supplied by the officers of the "Acheron," Admiralty Marine Surveying Ship, S. 45° 51' W.: this was about the year 1847. In the year 1849 a base line was measured on the plains, near Riccarton, in length 20,469 links, and on this a network of triangulation of two to three mile sides was carried from thence northward to Oxford, and southward to the Rakaia, but whether there were check bases measured at the extremes is not known. I found that in the field-books of 1849, which were kept in pencil, apparently only one reading to each station was noted, and that these are not copied on to the maps. There is no summation of the three angles of each triangle, but in a paper relating to the Oxford angles this is done in part, so far showing that the error in each triangle seldom exceeded thirty seconds. In the maps there is no proof that any attempt had been made to carry on the true bearing from the Initial Station. After the above operations a topographical survey was carried on by chain and theodolite traverse, which traverse was not referred directly to true or magnetic meridian, but ranges were selected on any azimuth at the convenience of the surveyor.

When this feature or topographical survey was completed the maps were ready for the marking of applications, and which ruled the actual surveys. These maps thus served a treble purpose of topographical application and working plans; on them the lengths of the sides of sections are given, but no bearings, and there is seldom any evidence how the lengths and positions of sections were connected with the trigonometrical points. If the field-books, however, were numbered and registered in relation to the maps, they might yet be of service in supplying this information, and which might be noted on the above plans.

The land regulations of this settlement from the very first allowed of free selection before survey, so in the same locality selections were of necessity surveyed at different periods, and by various officers. The mode of proceeding was to "build" the last section on its preceding neighbour, or on