

by this line are given in my report on roads to open up Crown lands. The road has been levelled and graded with ascending grades all the way, the steepest grade being 1 in 15 and the mean grade 1 in 80.

Other Work.—This comprises miscellaneous work not returnable under the general return, such as sub-triangulation, 11,800 acres, at 1½d. per acre, nearly all in forest country, with a great deal of cutting in breaking down from the hills. Also two sections (2 roods 23 perches), business-area allotments, at Deep Creek, laid off for the Warden of the gold fields.

Office Work.—From the detailed returns it will be seen that twenty certificates of title in lieu of Crown grants, in triplicate (which completes the Crown grants of land alienated in the district up to October, 1883), and ninety-eight ordinary certificates, in duplicate, containing in all 216 allotments, and representing 216 marginal plans, have been prepared during the year. Twenty-five deposited plans of sixty-three allotments were examined, passed, and traced. These, with the addition of 110 transfers, fifteen applications and seventy-six mortgages examined, represent the work done for the Land Transfer branch. The work done for the Crown Lands Department includes the preparation of deferred-payment licenses, gold-mining leases, pastoral leases and licenses and tracings. Seventeen surveyors' plans were received and examined. They have been plotted on to their respective block-sheets, and eight new block-sheets were constructed. One Land Transfer and five Crown-grant record-maps were constructed this year, and, together with those previously constructed, have all been brought up to date. These maps have necessarily been confined to the districts in which the surveys are in connection with the triangulation, and the compilation of fresh record-maps can only be proceeded with by degrees as points become determined and tied to the triangulation in the course of section or Land Transfer surveys. It is found quite impracticable to compile maps of the settled districts where the whole surveys are detached and based on magnetic meridian with no fixed points to control them. The work done for other departments includes maps and other information supplied to Road Boards, Sheep Department, Postal Department, Property-Tax Commissioner, &c. Assistance was rendered Mr. A. D. Wilson in completing the plans of his last season's triangulation. In conformity with your request, a map of the Marlborough District was compiled, to a scale of four miles to an inch, in which all the latest information was given. A considerable amount of difficulty was experienced in joining the districts that have been triangulated with those that have not; nevertheless, when published, it will be by far the most accurate and useful map of this district that has yet appeared.

Proposed Operations for 1884-85.—This year commences with major and minor triangulation over the upper part of the Wairau Valley: stations partly erected and ready for observing; 170 acres of section survey, and 165 acres near the mouth of the Hapuka River to be subdivided into one- to ten-acre sections for sale under village-settlement conditions. Upon the completion of the above triangulation I propose, with your concurrence, that Mr. Wilson extend major triangulation over the Waihopai and upper part of the Awatere Valleys, as recommended in my last report. I also propose, during the coming season, if Mr. Goulter can be spared for the work, to commence a standard survey of the principal road-lines in the settled districts of the Wairau Plains. At present the only points of reference for the Land Transfer surveyors are the trig. stations, and these, from their distance apart, the flatness of the country and the planting of trees and other obstacles, entail a large amount of survey in determining the bearings and distances in every separate survey of a property, and are most difficult of check. The erection of the standard points will obviate these difficulties, afford convenient reference stations on lines on true bearing in connection with the trig. points, facilitate the demarcation of properties, and be much appreciated by the surveyors and the public in reducing the cost of these surveys. The determination of these positions will also be of material service in compiling the Crown-grant and Land Transfer record-maps, a work at present, so far as the old surveys are concerned, impossible, for want of fixed points in connection therewith to control their compilation.

HENRY G. CLARK, Chief Surveyor.

NELSON.

Minor Triangulation without Topography.—An area of 42,000 acres, at a cost of ¾d. per acre, has been done by Messrs. Smith and Murray, for the purpose of fixing points in connection of sectional work.

Topographical and Trigonometrical.—During the year 220,067 acres have been surveyed, at an average cost of 1½d. per acre. Of this area 149,000 acres have been executed by Messrs. Smith and Thompson in the Amuri Circuit, and comprises a portion of last season's work. Mr. F. Smith carried triangles over the main range down the Ahaura Valley, connecting with the Westland triangulation on side Granite to Bell Hill, with a difference of 1.5 in a length of 32826.5 links, or an error of 0.366 per mile, the distance between the two bases, Hanmer Plain, Amuri Circuit, and Westland Circuit, being about 120 miles. The difference of the altitudes of stations on the two sides of the main range was found, on closing on Bell Hill, to be 3ft. The observed convergence between the meridians of the Amuri and Grey Circuits was 59' 17" 10, and the computed convergence from the triangulation 59' 15" 64, a difference of 1" 46. In twenty-four triangles the mean summation error is 5" 8, and in five polygons the mean closing error is 1" 6. Mr. F. Thompson carried on triangulation northerly, between the eastern side of the main range and the Upper Clarence River, as far as Lake Tennyson, in the Maling District. By this work he has been enabled to lay down the boundaries of several large leases not laid down, and to determine some disputed run boundaries. The work of these officers (assisted by Mr. F. Greenfield, cadet, who has been in charge of a working party during the year) has been very arduous, and involved much privation on account of snow and bad weather, and the difficulty of carrying provisions and tools in a very rough country, mostly covered with bush to a height of nearly 4,000ft. In the Hope and Tadmor Districts 57,217 acres, at a cost of ¾d. per acre, has been done by Mr. T. Sadd, in order to give the necessary checks on settlement surveys, and the sectionizing of a block of land in the