

Gold-mining Leases.—There is little doubt that in the summer some more of these leases will be taken up, and must be surveyed.

Triangulation and Topography.—It is to be hoped that the triangulation will be continued, and thoroughly good topographical maps made of the back country, similar to those admirable maps of the Amuri district prepared by the Nelson surveyors.

WALTER KITSON, Acting Chief Surveyor.

OTAGO.

I have had twelve staff surveyors and one private surveyor at work in the field, and four cadets. In the head office of this district eleven staff assistants and four cadets, and three temporary assistants; in the district offices, two assistants.

Minor Triangulation and Topography.—There were 347,489 acres of trigonometrical and topographical survey finished during the year, at an average cost of 0·96d. per acre. The surveyors engaged were Mr. Barron on Mount Buster District, Mr. Seaton on Hawkdun and Lindis Districts, Mr. Gibson on Crown, Cardrona, Tarras, and Cromwell Districts, and Mr. Cook on Upper Taieri and Hawkdun Districts. The country triangulated was high and rough, some of it nearly 7,000ft. above sea-level, and the weather experienced during the survey was unusually adverse, being wet and misty during the summer, while, as winter came on, the excessive amount of snow which fell compelled Messrs. Seaton and Cook to abandon further work for the season altogether. Mr. Seaton reports the wind so strong that the flags could not be kept on the trig. poles, and Mr. Cook that his theodolite, although securely planted, was on one occasion blown over and smashed. The field-work of 200,000 acres of Lorn and Rockside Districts (not included in the before-mentioned area) was also done by Mr. Wilmot; as the maps, however, have not come in, the cost only of this work has been included in the year's return. The work unfinished by Messrs. Seaton and Cook has been handed over to District-Surveyor Barron to complete during the next summer in the usual course of his operations.

Rural and Suburban Section Survey.—An area of 81,310 acres has been surveyed into sections of a mean area of 160 acres each, at a cost of 1s. 1½d. per acre. Twelve staff surveyors and one private surveyor have carried out this work. The greater cost of this class of survey, as compared with that of last year, is due to the exceptionally wet summer and many of the surveys being in the bush, while others are small and scattered over the interior of Otago. The principal rural surveys have been made in the following districts: Kawarau, Dart, Poolburn, Leaning Rock, Tiger Hill, Blackstone, Maniototo, Swinburn, Budle, Nenthorn, Hummock, Hummockside, Waikouaiti, Wendon, Wendonside, Greenvale, Otara, and Waikawa, and they embrace the greater portion of the area kept out of Otago runs in 1882–83 for agricultural settlement. The sections and roads have been carefully pegged, and the grades tabulated regularly, so that the practicability of the latter may be readily ascertained at any time.

Town Section Surveys.—Under this class I include the resurvey of part of the Township of Sutton, surveyed by Mr. Cook, and the village settlements, being subdivisions of sections previously reserved at Hawea Flat, Glenkenich, and Tuapeka West, surveyed respectively by Messrs. Campbell, Mackenzie, and Seaton. An area of 431 acres has been laid off into 252 allotments, at an average cost of 19s. 10d. per allotment.

Standard Survey of Port Chalmers.—This work has been very well carried out to completion by Mr. Langmuir, to whom I intrusted it, the time occupied being about six months. The difficult nature of this work was not merely due to the hilly character of Port Chalmers, and the bustle of some of its streets during the day-time, but to the following causes: No original survey peg was found in any place within the town, and very few original positions of pegs could be satisfactorily ascertained from the evidence of settlers. This was found to be a very serious drawback in deciding on a basis of operations or starting-point, and was rendered more so on account of many very palpable errors and encroachments by fences on the street-lines, together with the absence of any connection of the original survey with a triangulation. In determining the position of blocks and street-lines, therefore, an approximation only has been aimed at, and which has been decided after long and careful consideration of the lengths of block frontages as occupied compared with the original Crown record-map distances for the same lines. Generally the blocks as occupied were found not to exceed in area or in frontages the blocks as shown on the Crown record-maps, and it is satisfactory that this close agreement holds good in George Street and other of the important business streets. Very solid standard stone blocks have been sunk, set in concrete, to mark the point where streets meet, and iron trig. tubes at less important points. The measurements were laid down with a steel band adjusted to the Dunedin standard, temperature being taken and everything done as carefully as for a base-line in triangulation. The closes average a difference of 0·0485 of a link, or about one-third of an inch in 10 chains. The vertical angles of all standard lines were observed by the theodolite with great accuracy, and the levels of all the principal points deduced therefrom. The altitudes, having their origin at the Geodesical Station, Observation Point, Port Chalmers, are consequently on the same datum as the altitudes of the Otago triangulation, viz., low-water mark of spring-tides. In regard to the town belt of Port Chalmers I have to add that its outer boundary was surveyed and pegged by Mr. Langmuir, an agreement having previously been signed by the mayor and the freeholders interested to accept the determination of this office as to its position. The maps, which are all beautifully and accurately drawn, comprise a general map of the town, showing the standard lines and points—four sheets, on a scale of 1 chain to an inch, showing the details of the standard survey, and three sheets of longitudinal sections of the street-lines. Copies of all the above-mentioned plans are being now made for the Corporation of Port Chalmers.

Gold-mining Surveys.—Four staff surveyors and one private surveyor have been engaged in the survey of the gold-mining claims during the past year in the Queenstown, Cromwell, Clyde, and Naseby office districts. The area so surveyed is 778 acres in fifty-nine sections, at a cost of 10s. 8d. per acre on an average. The surveys, and particularly in the Queenstown district, are unavoidably costly, as they