

Upper Waitaki Plains; and 154,300 acres by Contract Surveyor G. M. Barr, C.E., in the Gala and Otematakau Districts, Upper Waitaki. The average cost per acre was 1½d. The triangulations of Messrs. Connell and Barr adjoin one another, and were started from independent base-lines—one measured close to the Omarama Creek, in the Ahuriri District, and the other measured in the valley of the Otematapayo or Gala River, in the Gala District. These base-lines were measured, with the usual precautions, by means of steel bands or tapes 100 links long, referred to the Dunedin standard length laid down at the Customhouse. The angles were observed by 5-inch theodolites, both plain. Mr. Connell's work joined a previous triangulation of his which had been carried from Lake Ohau to Lake Hawea in the year 1873, and showed with that work a difference at the rate of 3·8 links per mile. He also had a junction with above triangulation of Mr. Barr's along the south boundary of Benmore District, which showed a difference at the rate of 0·75 links per mile. Mr. Barr's triangulation showed above difference, of 0·75 links per mile, at its junction with Mr. Connell's triangulation; at its junction with old Kurow triangulation of Mr. Grant's, at the rate of 3 links per mile; and at its junction with Mr. Grant's triangulation on Canterbury bank of the Waitaki River, at the rate of 0·66 links per mile. These results, as between Messrs. Connell and Barr, I consider very satisfactory, more particularly as the start from Mr. Barr's base was awkward, owing to the mountainous character of the country and its peculiar formation, which caused an increase in the number of stations to be observed from, between the base-line and the junction between the two surveys. Mr. Barr's junction, again, with Mr. Grant's work on Kurow was effected under unfavourable and difficult conditions, due to the convex and too-gradually-ascending shoulders of the Kurow Range. The close, therefore, between these two triangulations may be regarded as fair under the circumstances, and showing honest results. These triangulations complete the connection from Observation Point to Lake Ohau by the coast and valley of the Waitaki River, and meet those other triangulations which have been carried round by other routes to Lake Ohau.

During March and April of this year Mr. Wilmot, Assistant Surveyor for Queenstown District, has been engaged exploring the valleys of the Routeburn and Hollyford River to the West Coast, and selecting trig. stations, so as to connect the main system of triangulation which extends to the head of Lake Wakatipu with the isolated triangulation of part of Martin's Bay District. This work is spread over thirty miles of wild Alpine country, full of bush, and intersected by dangerous snow-fed rivers. Provisions, tents, &c., had to be carried on the men's backs for the greater part of this distance, including the crossing of the dividing range at about 4,000 feet above sea-level. Notwithstanding the natural difficulties of the country and that two weeks were lost by wet weather, Mr. Wilmot succeeded in doing his work of selection and setting up flags in seven weeks. I must also add that his method of operations showed good judgment, intelligence, and energy. A full report of this has already been furnished.

RURAL SECTION SURVEYS.

The staff surveyors engaged in this class of work during the year were Messrs. Strauchon, Barron Mackay, Mackenzie, Murray, Edie, Langmuir, Wilmot, Campbell, and Armstrong. Mr. Edie's work was delayed somewhat by his illness, and Mr. Armstrong has only been six months in the field with his party. The total area surveyed under this heading is 115,276 acres, at an average cost of 1s. 0½d. per acre. This acreage is good as compared with that of last year, because the sections are of smaller average size, and there has been a great deal of travelling about on the part of several surveyors, such as in the case of Mr. Mackay and Mr. Campbell. Mr. Mackay alone has done 980 miles in travelling, occupying about three months of the twelve; this being unavoidable where isolated sections have each to be surveyed separately, under the existing laws. Another circumstance affecting the cost is bush work; a considerable part of Messrs. Strauchon's, Mackenzie's, and Armstrong's being of that nature. In Mr. Strauchon's case, part of the bush survey has been by order of the Waste Lands Board, and part the result of general instructions from your office to get all districts which have been surveyed lithographed as soon as possible; while bush work done by Messrs. Mackenzie and Armstrong has been by instructions of the Waste Lands Board, the result of purchases of land, or of applications to purchase old bush reserves. The Clutha River Trust endowment, surveyed by Mr. Strauchon and Mr. Armstrong, contains a considerable proportion of very good agricultural land.

A survey of 6,700 acres about Livingstone, in the Maruwenua District, was very troublesome and tedious. This was done by Mr. Barron, and contributed largely to making the average cost of his work as high as it is—1s. 6d. per acre. It is due to Mr. Barron that I should point out that much of this ground has been mined over for gold, and is being so worked now; that it is intersected by numerous water-races, having also many mining rights to be protected: so that the actual amount of surveying, pegging, and calculation necessary has been out of all proportion to the value of the land. After all, a large number of sections have had to be put into mining reserves; and the whole question of dealing with this block will be a difficult problem for the Land Board to solve.

There are 20,000 acres of an educational endowment near Wakaia which have been surveyed by Mr. Murray and Mr. John Campbell into sections from 200 to 320 acres. This comprises some of the finest unsold land in Otago, and the climate, the settlers have informed me, is very fine. Bush and firewood are conveniently situated to most of this land, and in general it is well watered.

Mr. Langmuir's work has been such as involved less travelling than that of any other surveyor; which, together with his energy and diligence, have resulted in his surveying 20,817 acres at the small cost of 6·2d. per acre. It must not be inferred from this that other surveyors whose work has cost more have not done their duty; but it shows how cheaply a good staff surveyor can turn out work, provided the conditions are favourable. In this respect Mr. Murray's work is even cheaper; for, although his rate per acre is higher, the allotments laid out by him are smaller, and he had more travelling.

Mr. Edie, who is leaving the service, has just about finished the survey of a "village settlement" near Hindon, and within two miles of the Otago Central Railway line, to which a good practicable dray-road has been surveyed. The land is good and well watered. The area is not included in this year's acreage.