

wards to the Mungo junction, and the Mungo itself to its glacier source. The principal tributaries of the Upper Mungo—Park Stream and Brunswick Creek—were also surveyed. On the 11th February, I reached Mungo Pass (5,900 ft.), on the main divide near Mount Park, thus connecting with the work done in the previous year on the eastern side of the Alps in the Wilberforce district.\*

Soon after my return from the Upper Mungo to the main camp, Mr. Ritchie left in order to take up another employment, and from this time till joined by Mr. Bartrum I continued field-work without any trained assistant.

The exploration of the upper part of the Whitcombe was now begun, but a prolonged period of bad weather set in, so that time after time we were compelled to fall back on the main camp without having made much progress. Finally, however, on the 21st March, Whitcombe Pass (4,025 ft.) was reached, and the survey of the Upper Whitcombe finished.

While camped at the junction of the Wilkinson and Whitcombe rivers we had a magnificent view of the Wilkinson Glacier and its ice-fall, the latter being one of the finest in New Zealand. During wet weather the roar of an avalanche descending over the great precipice on the south side of the glacier was heard every few minutes. From the same point may be obtained an excellent view of Mount Evans, which is 8,612 ft. in height, and is, with the exception of Mount Whitcombe, the highest peak in the Mikonui Subdivision. On the 25th March we pitched a camp on the west side of the Whitcombe River, near the Cropp junction. From this point we explored the upper valley of the Cropp and the south-eastern slopes of Mount Bowen, where, near some remarkable outcrops of serpentine and dunite belonging to the Pounamu Formation, we placed a flying camp. The mountain itself, which forms a rather conspicuous dome 6,516 ft. in height, and is the most northerly snow-clad peak of the Lange Range, was ascended on the 4th April.

About the middle of April camp was shifted to the upper part of the Mikonui Valley, where it was necessary to complete some work left unfinished the previous season, largely owing to a spell of bad weather. We were again unfortunate in the weather, but before the end of the month had completed the survey of the Mikonui watershed.

After spending two days in exploring Farmer Creek and other eastern tributaries of the Totara River, we shifted the main camp on the 1st and 2nd May to the Kakapotahi or Little Waitaha River, twelve miles south-west of Ross. From this base we surveyed the valley of the Kakapotahi, Mount Rangitoto, the lower Waitaha Valley, Duffer Creek, &c. The sea-coast was traversed from the mouth of the Mikonui to the Wanganui River, a distance of about twenty miles. An interesting piece of work was the sounding of Lake Ianthe, a pretty little sheet of water with an area of somewhat less than two square miles. The maximum depth of the lake when in its ordinary condition was found to be 105½ ft., but since the lake rises several feet during periods of heavy rainfall, its greatest depth at such times approaches 110 ft. Only a small part of the lake is over 100 ft. deep, and the greater part is less than 20 ft. in depth.

On the 5th June camp was broken up, and field-work for the season terminated.

Early in November field-work was resumed in Westland. My first work was at the main camp which had been established by my chainman, Mr. John Hooker, in the Waitaha Valley, a mile or more beyond the last settler's homestead. At the time of my arrival in camp the field party had made considerable progress with a compass-and-chain traverse up the Waitaha. We found this little-explored river extremely gorgy from the point where it enters the alpine chain, and above the junction with Kensington River a reach of about five miles proved very difficult to traverse. A great deal of track-cutting was necessary over the various gorges and bluffs, whilst the transport of camp-material and food involved much climbing with heavy loads, as well as travelling over some very rough river-bed.

Towards the middle of December, Mr. J. A. Bartrum, M.Sc., now Assistant Geologist, joined me as field assistant. After my departure for Wellington in March, 1908, Mr. Bartrum took charge of the party, and continued field work, as mentioned below, until the beginning of the winter season.

In order to reach the head of the Waitaha, a distance of about 13½ miles from the main camp, no less than four flying or temporary camps, each in advance of the preceding camp a distance of from two to four miles, were necessary.

The excellent weather which set in just before Christmas enabled us to finish the traverses of the Waitaha and some of its tributaries during the third week of January, 1908. The mountain-tops, however, were almost constantly enveloped in cloud, and in consequence I was not able to get as many cross-bearings for checking positions and filling in topographical details as were desirable. I may add that all through the summer cloud and fog proved great drawbacks, and even in the finest weather the mountains, though perhaps visible in the morning, generally disappeared before mid-day. However carefully we might select our day, we were more or less disappointed four times out of five, if not oftener, on climbing a peak or ridge for the purpose of taking cross-bearings, &c.

On the 20th January of this year we shifted our main camp to the north bank of the (Big) Wanganui River, near Hende's Ferry. From this base we established a number of minor camps and explored almost the whole watershed of the Wanganui from its glacier source to its mouth. Until the last day of February fine weather prevailed, there being only one spell of heavy rain, and we were able to survey the whole of the district within reach of the main camp, as well as to carry a chained traverse over fifteen miles in length from a point four miles above our camp almost to the névé of the Evans Glacier, the source of the Wanganui River. In addition a number of minor streams were surveyed by paced traverses.

On the 1st March heavy rain set in, and for a period of nearly three months no settled weather was experienced. Fortunately we had shifted from our top camp to one lower down the river the

\* See Bulletin No. 1 (New Series), N.Z. G.S., p. 38.