

had been incessantly falling during the preceding two days, and was still coming down in torrents. It was here that, after being ferried over the main stream, in swimming your horse in advance of the party to within half a chain of the southern bank of one of the branches you had a very narrow escape from either being overwhelmed by the river or being carried out to sea by the force of the current, which was then running at the rate of ten or twelve miles an hour. Most of the party were at last, with much difficulty and at some risk, ferried over the three wide channels in which the flooded river was now flowing. It was nearly pitch dark when the farther bank was reached. Burmeister, the ferryman, had to remain all night on the southern bank, prostrated by the heavy and protracted labour of effecting the passage, and confounded at the insanity of any one attempting to cross the river in such a state of flood and darkness. After travelling three miles farther along a very narrow and, in the dark, a very precarious track, we reached Jackson's Bay. The Warden, Mr. McFarlane, has had for many years very sanguine views of the future greatness of Jackson's Bay. He is able to give a great deal of information, gleaned from many sources, about the geographical and geological features of the whole coast from Martin's Bay on the south to Hokitika on the north, a distance of something more than 200 miles. He has come in contact with probably all the prospectors who have been for years exploring among the mountains, up the river-beds above the level of the bush, and among the glaciers of the interior ranges that run parallel with the coast. From these and from others he has received specimens of various kinds of ore and of rocks that throw light on the geological formation of the region. Many of these specimens he has from time to time sent for analysis to various authorities, others he has given away to friends and museums, and a few he still retains as a small collection illustrating the mineral character of the district. Among his specimens Mr. Fenton, who joined our party at the Haast, and myself tested and identified: (1.) Chrome ore. (2.) Galena, or sulphide of lead, which Mr. Fenton, on assaying, found to contain about 60 per cent. of lead and about twenty ounces of silver to the ton. (3.) Stibnite, or sulphide of antimony, containing on assay about 35 per cent. of antimony. (4.) and (5.) Two samples of tin ore, the one apparently broken off a piece of vein-tin stone of some size, the other evidently stream-tin ore, and both of very good quality; both also said to be got in the granite country to the south-east of Jackson's Bay. (6.) Various samples of yellow copper pyrites, containing about 24 per cent. of copper. (7.) Black sulphide of copper, containing about 55 per cent. of the metal. (8.) A very interesting specimen of fine river-sand, containing a small proportion of white malleable and highly-magnetic flattened particles of an alloy of nickel and iron. (9.) A sample of black oxide of manganese, of which there is a wide lode some twenty or thirty miles to the southward. (10.) A good specimen of well-crystallized grey hornblende, closely resembling in colour and lustre zincblende, but of no commercial value. (11.) A few specimens of green talcose serpentine, in which were visible some white metallic specks which were pointed out to me by Mr. McFarlane, and which, on examination in the laboratory of the Hokitika Chemistry Club, we found to be the nickel-iron alloy. This last was an important discovery, as it seems to reveal the matrix in which the alloy exists, and from the *débris* of which the nickeliferous river-sands had their origin.

In Jackson's Bay, on the sea-beach, we saw, among the boulders, rounded fragments of the following rocks: (1.) Felsphatic and hornblendic dykes (fine-grained diorites). (2.) Serpentine of various colours, from nearly white to greenish-black, many being beautifully variegated. (3.) Greenish talc, white on exposed surfaces. (4.) Large hard and heavy boulders of olivine, covered with an encrustation of reddish-brown oxide of iron. (5.) Mica schists. (6.) Chlorite schists. (7.) Granite. (8.) Saccharoid (coarsely crystallized) limestone. (9.) Coarse nephrite or jade in veins traversing hard siliceous slates. (10.) Quartz (vein-quartz) in boulders and traversing slates. There can be no doubt about the promising mineral character of the district that presents to us, in its river-beds and on its beaches, such a variety of ores and rocks as are enumerated above. Next to the Coromandel Peninsula, which I have visited, and the Nelson and Collingwood District, which I have not yet seen, I believe there is no region in the colony so promising to the prospector for other metals than gold. I am not sanguine about its gold-bearing character—I know nothing of it, however, except from hearsay, and from the detached specimens enumerated above—but it offers great possibilities in other directions—tin, copper, nickel, lead, perhaps silver, antimony, chrome ore, black oxide of manganese, with perhaps others hitherto undiscovered from the lack of knowledge on the part of prospectors of what to look for, and how to know what they are when they have found them. The want of this knowledge on the part of otherwise most intelligent and very industrious and energetic prospectors is greatly to be deplored. Here they are groping among the mountains for valuable minerals with their eyes shut to everything but gold. The gold is in many cases absent, but there may be present plenty of tin, silver, scheelite, nickel, &c., much more valuable than most gold mines, and yet disregarded because unrecognized. It will, in my opinion, be the dawn of a new era for New Zealand, as well as other of the Australian Colonies, when three-fourths of our practical and most intelligent miners and all our prospectors are taught the simple tests for all valuable ores, together with as much of the principles of geology and mineralogy as will enable them in the most direct, easy, and certain manner to follow up the indications which the rocks afford.

Leaving the beautiful and most interesting Jackson's Bay behind us with regret, we returned to the Haast on the 7th. On the 8th, accompanied by Mr. Marks, whose horses we had engaged to Okarito, we made a fresh start northwards, at first along the beach and then, on a very well-engineered and good track over a saddle some 2,000 feet high, to Mr. Stephenson's station on the Paringa, which we reached the same evening. Next day Mr. and Mrs. Stephenson accompanied us on horseback over eight miles of the most execrable track I have seen in New Zealand, and then five miles along the sea-beach to Bruce Bay, where we were detained all night, finding it physically impossible to pass the importunate miners settled there without spending a night with them and hearing what they had to say. At Paringa Mr. Stephenson, who owns a cattle-run and grows and fattens bullocks for the Hokitika market, showed us samples of very coarse alluvial gold and