ferous drifts of this part of the district were extensive enough to warrant sluicing-operations on a large scale. And it has required the latter examinations to be detailed in the further portion of this report to demonstrate the real extent and value of the auriferous deposits of Humphrey's Gully Range, and of like deposits of the same, or nearly the same, age in different parts of the district. Humphrey's Gully Claim, though, perhaps, it has not yielded up to the first-formed expectations of the promoters of the company, has yet to be looked at as giving returns leading to the conclusion that all the water that, at a reasonable cost, can be brought to bear on this or similar deposits in the same district, will, at least, pay interest on the capital requisite.

But while all this has been, and is so, as respects the development of mining over the low grounds of Westland, the discovery of gold-bearing or other metalliferous lodes in the mountainous interior part of the district has been slow, and the reefs that have been found and prospected have not yielded according to what might have been expected. Naturally enough, it was concluded that the district which supplied so much alluvial gold to the lower grounds must abound in rich auriferous reefs, and, although there were those who speculated as to the probability of a different source, undoubtedly the most natural inference was that the gold had been brought down from the mountains of the interior, and by various processes, distributed over the low grounds and along the coast-line by ordinary natural agencies, including the action of glacier ice as a means of transport.

As a result, early in November last, I was instructed to examine the country towards the head waters of the Arahura and Hokitika Rivers, with a view of ascertaining on what grounds these hopes and surmises might rest. I did not succeed according to my wishes in this respect; and the further interior country of the Hokitika watershed was not reached, owing to the season being a very unfavourable one for such explorations; more than half my time in the field was lost, due to this cause. Nevertheless, I collected a number of facts that bear strongly on the subject of my explorations amongst the mountains, and my work in the lower coastal region has not wholly been without result.

Examination of the District in connection with the Development of the Mineral Resources of Westland.

The principal object of the examinations made being the "discovery of any auriferous or other metalliferous deposits that occur in the country about the Upper Arahura and Hokitika Rivers," on my arrival at Kumara, as soon as possible I commenced the exploration of the Arahura Valley. Gold discoveries were, of course, to be expected, and the nature of the deposits in which gold is found in the lower valley had to be studied, as a guide to the rocks in which auriferous lodes might occur in the mountainous part. Being aware that detrital matter from the Upper Arahura watershed was spread over a considerable area, which is not now drained by that river, or any of its tributaries, but by the Kapitea Stream, and which also forms part, the southern side, of the long line of morainic hills that extend from Dillmanstown east to the western base of Mount Turiwhate—this area had also to be taken into consideration. Later on, it was ascertained that the gold-bearing gravel of the Waimea Valley, at least of the upper middle and main valley, had its origin from the Arahura watershed, and that the Waimea Valley has been the course of a river, of far greater volume than its watershed at the present day could supply. The probabilities are great that the Arahura formerly passed along the Waimea Valley in its course to the sea. In the same connection, the Blue Spur, Big Paddock, and Houhou Lead had to be examined, and the range of hills between Humphrey's Gully and the Kanieri watershed had, also, to be studied.

The gold-drifts on the coast-line, whatever their source and age—not being, in the stricter sense, valley deposits—though they may imply the auriferous character of the back country, yet from their mixed character and uncertain source, a study of them could be of little advantage in tracing the auriferous belts of the interior inland parts of the Arahura watershed. Neither the high-level terrace deposits, stretching from the north side of the Hokitika Valley below Kanieri north, across the lower Arahura and Waimea Valley, afford the kind of evidence required, being like the lower-level deposits of the coast-line, of marine origin.

The river terraces and low shingle-flats that lie on both sides of the lower part of the Arahura, away from the immediate banks of the river, have not yet been proved to be auriferous. The flat ground between Fox's Creek and the river, one would think should be auriferous; but they do not appear to be so, and the difficulties in contending with water in the low ground prevent its being bottomed. On the opposite southern bank of the Arahura, Mr. Boys, of Blue Spur, has driven a tunnel a distance of about 4,000ft. through gravel-drift, forming a terrace at a higher level above the river, and a second terrace yet higher at the back of that. Though the main object of this work was not to prospect the drift passed through, but to reach and drain deep ground situated nearer the saddle leading from the Arahura Crossing to the Blue Spur, it yet prospected the whole terrace, from the river-bed to where these were passed through and the blue Miocene bottom was reached. Of course, this tunnel did not prove whether or not gold occurred in the higher strata of these terraces, but it proved along the line of the tunnel the middle and lower parts with negative results.

On examination, the gravels proved scarcely different to what may be studied in the Arahura River-bed at the upper crossing, or higher up as far as the second gorge. The only distinction that could be made out was that there were fewer boulders of olivine and serpentine rock in the tunnel gravels than are to be met with on the river-bed.

At Fox's, Stony Hill, Greek's, Duffer's, and Callaghan's, the gold deposits are either morainic, or morainic material re-assorted by the action of running water, and are found resting on brown gravels ("Old Man bottom"), or on "blue bottom" (fine sands or sandy calcareous clays of Miocene age). The material of such deposits vary in different localities, but as a rule granite rocks predominate, and this at first sight might lead to the inference that the gold has been derived largely from the granites and gneissic rocks that lie to the westward of the mica-schist belt. Partly confirming this hypothesis, is the fact that the material of the Kawhaka River-bed is chiefly composed of