

The general character of this belt of auriferous gravel-drift is somewhat similar to that found on the deep-levels on Ross Flat, and it is a much older deposit than that found further back in the ranges, and indicates that there is a great deal to be said in favour of the theory set up by Dr. Hochstetter thirty-four years ago when he visited this colony. In his work on the Physical Geography and Geology of New Zealand, chapter xxi., he calls attention by a map of the Middle Island to the position of the Southern Alps, showing the gradual descent of the land on the eastern slope, and the abrupt declivity to the ocean on the western slope of the range, and that there are radiating fissures in the rocks from one common point. He states:—

“Although the joints cross each other in all directions, apparently without order, there are two prevailing systems of joints which have an important influence on the configuration of the surface. These are: first, a system of vertical cross joints at right angles to the stratification, and running in broken lines for great distances, with such regularity that they might easily be mistaken for planes of stratification, were it not for the frequent occurrences of beds of trap-rock, the outcrop of which marks unmistakably the true bedding, not running in parallel planes, but arranged in a series of curves radiating from a common centre.

“The effect of this system of jointing, combined with the strike of the beds or the direction of the axis of folding, is to produce two distinct systems of valleys in the central chain, the direction of which is very remarkable. The one radiates from a common centre situated about 50 miles north of Mount Darwin, in the sea, near Clifly Head. This system includes all the principal valleys, from the Teremakau on the north to the Makarora on the south, their direction varying from N. 82° E. to S. 30° W., giving the idea that the country has been starred by a violent blow, or as in rock-blasting a set of radiating fissures is sometimes produced by a single shot. To the other system belong the valleys of rivers and watercourses running either on the strike of the beds or in the direction of the cross joints, or in a compound zigzag course following alternately these two directions, like a line struck diagonally across a chess-board, but following the sides of the squares, and giving to the cliffs which bound these valleys a peculiar rectangular appearance resembling ruined masonry on a gigantic scale.”

The inference to be taken from this is that at some remote period the land extended a considerable distance further to the westward than at present, and that, through volcanic agency or the sudden generation of gases, violent shocks took place, causing rents and fissures to radiate from the seat of action; and near the epicentrum, or place where this occurred, the land would gradually sink down. Mr. A. McKay, F.G.S., Assistant Geologist, in a map to illustrate his report on the Geology of Marlborough and South-east Nelson, published in the Reports of the Geological Explorations for 1890–91, shows the principal faults and earthquake-rents, which proceed from almost a common centre at a point seawards between Hokitika and Jackson's Bay. The whole of the information gathered by Mr. McKay relating to the fissures and earthquake-rents in the Middle Island indicates that a terrible cataclysm has taken place, and that land extending far to the westward of the mouths of the Totara, Miconui, Waitaha, Big, Wanganui, and Wataroa Rivers has since been submerged, and at the time when this took place it dragged, as it were, the western side of the main range down for a certain distance with it, which would easily account for the auriferous drifts being found at the deep levels on Ross Flat, at 240ft. below the present sea-level.

If the coast of New Zealand extended for one hundred miles less or more further to the westward than it does at the present, it is likely that very high land existed; and, instead of the older gravel-drifts coming from the present backbone of the Island, they may have come from an opposite direction, and possibly from lands situated some thousands of feet at a higher elevation than the top of our highest mountains, and that these high lands were highly auriferous. Dr. Hochstetter, in the same chapter of his book previously referred to, states, with reference to the auriferous character of the West Coast: “The western slope and part of the central chain consists of crystalline rocks and metamorphic schists, highly auriferous, and resting upon a basis of granite. . . . To the eastward of the crystalline zone, stratified sedimentary rocks appear, such as slates, sand-stones, conglomerates, indurated shales, interstratified with trappean rocks of a dioritic or diabasic nature. These compose by far the greater part of the eastern side of the central chain, exhibiting anywhere these huge foldings. . . . The eastern foot of the mountains is formed by tertiary and alluvial deposits broken through by volcanic rocks. The period of volcanic energy was one of upheaval, and since it closed we have no evidence of there having been any submergence of the Island on the east side, while on the West Coast the evidence derived from the mountains rising directly from the sea, and penetrated by the fiords, indicates rather a gradual submergence.”

As to deposition of these auriferous older gravels on the West Coast, they were never brought there and deposited by glacial action entirely. They certainly have been subjected to the action of a flowing stream, as all the stones are highly rounded, and worn greatly. There are very few large stones in the drift, and the whole of them are in a greatly decomposed state. It is very evident from the configuration of the country, and the direction in which many of the old river-channels can be traced, following a totally different course to the present rivers, that New Zealand has undergone many changes; also, there is evidence, by the amount of material in these ancient channels, that it has been moved by a flowing stream, and that the drainage basins of these streams or rivers were of much greater extent than they are at present. If a large area of country to the westward has been submerged, then these older auriferous drifts may have come from the seaward, and not from the denudation of the present mountain-chain. The same character of auriferous wash is obtained in portions of the Mont d'Or and Greenland Claims, which are 3,000ft. above sea-level; but at the time these gravels were deposited on the low lands near the ocean-beach, this land was in all probability at nearly as high an elevation as the top of Mount Greenland is at the present day, and that a gradual subsidence took place to the westward; rivers were formed in different channels following the lines of fissures and rents produced by volcanic or other similar agency, causing sudden shocks to take place; material was brought down from the now main range of the