

Criffel to the west side of the valley this has been assumed to be the case. As the breccia conglomerate and newer quartz drift along Criffel Face is auriferous, and promises to afford payable ground, that part of the fault-line which runs through Otago is thus of economic importance. The Awatere Fault (Fault No. 3) runs coincident with No. 2 in the south-west part of its course, and within Otago is no longer to be distinguished. A fault appears to be present along the Cardrona Valley, above the township, as small patches of involved quartz drifts are to be found along that line; but for the present this can hardly be considered as a line of great fracture, and therefore has not been distinguished by a number and a name.

Fault No. 14 (the Nevis Valley Fault).—This is quite evident along the eastern lower slopes of the Remarkables, and from Nevis Burn and Coal Creek across the ranges to the Kawarau River near Gibbston. The line along the Nevis Valley, from the township to the bridge, six miles further down the valley, is not in line with that part which crosses the ranges to the Kawarau; but there can be little doubt that the fault is the same throughout. On the north side of the Kawarau Gorge the line crosses the saddle at the source of the Cardrona, and is probably continued as far to the north-west as the coal-mine in the upper part of the Cardrona Valley.

Fault No. 15 (Mount Pisa Fault).—Between Mount Pisa and Criffel, and from opposite the highest point of the former, a line of fault involves and bounds the western part of the "Fat Boy" line of quartz-drift deposit. This fault is nearly parallel with that on Criffel Face. Southward it is probably continued into the watershed of the Roaring Meg. To the northward the line continued runs along the depression of Lake Hawea and the valley of the Hunter River. Its importance in the present case is, that what are likely to prove valuable auriferous deposits are preserved along the east side of the fault-line. These have not been sufficiently explored to show their true value, but, being contiguous to the rich auriferous quartz-drifts of Criffel Diggings, the Fat Boy line of drifts warrant extensive prospecting, and their greater area will give them an importance, if sufficiently auriferous, which the Criffel deposit could not lay claim to.

Fault No. 16 (Clutha Valley Fault).—This runs along the eastern base of the Mount Pisa Range. It crosses the Kawarau a little below the east end of the Kawarau Gorge, and is continued to the south-west along the eastern base of the Carrick Range to the upper part of the Bannockburn Valley, and thence probably into the watershed of the Fraser River. The evidences of faulting along the north-eastern part of this line are more to be inferred than actually seen, as the beds faulted are for the most part obscured by deposits more recent than the formation of the fault. South of Bannockburn Diggings such evidences are sufficiently plain. Lesser faults occur along the lower course of the Bannock Burn, but these cannot be traced to any great distance, and may be overlooked in this place. Auriferous deposits and important gold-workings lie along the main line of fault, but the upper beds, consisting of "mountain wash" have not been affected by the fault, and the lower quartz-drift deposit has been but little, if at all, prospected.

Fault No. 13 (the Tuapeka Fault).—This is one of the greater fault-lines which, though perhaps, structurally considered, it be of less importance than the Great Clarence Fault and the Moke Creek Fault running along the base of the Richardson Mountains, is yet in other respects more important than they. It is apparently the most recent of all the great fractures crossing the gold-fields of Otago. First discovered at the Blue Spur, Gabriel's Gully, it has, as it there appears, been described by Mr. Rickard in the paper from which an extract has been made at page 2. The fault, at the suggestion of Sir James Hector, is also shown on the map facing page 1 of the Geological Reports for 1890-91. This year's examination proved that the direction of the line of fracture was not exactly as shown the map illustrating Part II. of my report on the geology of Marlborough and south-east Nelson. From Monro's Gully the line of fault is distinctly traceable into the watershed of Weatherstone's Gully, and thence less clearly it may be followed into the Waitahuna watershed. Waitahuna Gully lies along the line of fracture, and it is as clearly and characteristically displayed on the east side of the Scandinavian Claim, at the head of the left branch of Waitahuna Gully (see Section No. 6), as it is at Blue Spur itself. Setting out the line of fault as between the east side of Blue Spur and this point, and continuing the line to the south-east, the same passes remarkably close to the quartz-drift gold-workings of Manukau Hill and the breccia-beds at Glenore Railway-station. The distance between Glenore Railway-station and Blue Spur is so considerable that the line continued in the opposite direction may fairly indicate the true course of the fault. Continuing the line of fault as thus set out, and making some—and that but little—allowance for deviation from the straight line, the fault passes not far to the westward of the junction of the Manuherikia with the Molyneux at Alexandra, and is but a little to the west of the average course of the river through the Dunstan Gorge. Perhaps there is no warrant to suppose that this line of fault is continued farther to the north-west or to the south-east, but continued to the north-west it would cross two or more lines in the vicinity of the lower end of Lake Wanaka, and would thus confirm what has been noted—namely, that where two or more of these fault-lines intersect within a limited space there is at that place, relatively, an area of depression.*

Fault No. 17 (Conroy's Gully Fault).—This runs along the southern side of Conroy's Gully. It is indicated by a line of quartz drift which, dipping at high angles to the south-east, or standing nearly vertical, is suddenly terminated against the schists forming the higher slopes on the southern side of the valley. The quartz drifts thus involved are said to be auriferous, but they do not seem to have been much prospected. From the fact that the creek-bed of Conroy's Gully was very rich in gold opposite to where this line of quartz drift occurs, it is reasonable to suppose that a large part of the gold in the modern creek-bed was derived from the quartz drifts. Another line of quartz drift deeply involved along a fault runs from Butcher's Gully in the direction of Alexandra and the lower part of the Manuherikia Valley. Which of these two it is that is continued along the Lower Manuherikia to Chatto Creek it is not easy to determine. Probably the two unite, and therefore, for convenience' sake, as far as to Chatto Creek this line of quartz drift preserved by faulting shall be considered as belonging to, and a continuation of, Conroy's Gully fault.

* Geological Reports, 1890-91, page 25.