

them to have a thickness of about 30ft. at least. Their area at this place is small; yet they deserve some attention, as being possibly gold-bearing. Lower down there are sands and shales on the right bank of the stream, and with these traces of coal.

*Cardrona Valley near the Township.*—Above the township for a mile or better the hill-slopes from the south-east spurs of Mount Cardrona narrow the valley, and confine the creek within a very rough bouldery bed. The immediate slopes on the north-west side are covered with like material, forming a fan-shaped talus slope which covers terraces formed on this bank of the stream. Further to the north-east, on the same side, beds of greater age appear at a higher elevation, and on the right bank of the stream, underneath the coarse bouldery wash mentioned, are heavy beds of slaty schistose shingle, and yellow sandy beds of finer grain derived from the same source. These beds of coarser material have yielded the great bulk of the gold found in the bed and banks of the river near the township. A short distance below the township they lose their character as very coarse material, and are spread over the low flats as ordinary river-shingle. Opposite the upper part of the township is, or rather was, Robinson's claim, the wash in which was coarse river-gravel resting on the schistose shingle and fine sands already alluded to. This claim yielded a large quantity of gold, and very rich samples were found embedded in the surface of the soft sands on which the gold-bearing wash rested, leading to the belief that these sands were rich in gold, though such actually was not the case. The relation of these sands and shingle-beds of schistose material to another great series of sandstone gravels in the Cardrona Valley is somewhat difficult to make out, and will have to be discussed in another part of this report.

*Criffel Face, Upper End.*—Opposite the lower part of Cardrona Township, on the east side of the valley, and some 800ft. to 1,000ft. above the valley, there is a line of auriferous drifts running along the steep slope of the mountain-range known as Criffel Face. The beds dip eastward at high angles, and thus appear to pass under the schist rocks of the higher part of the range. The auriferous beds undoubtedly lie at the base of the series of strata to which they belong, but by a series of disturbances they have become inverted and thrown back upon the higher beds of the series, and their junction with the schists along the line of Criffel Face must be regarded as a line of fault, or, at all events, of acute inversion of the strata, both old and young, such as can hardly have occurred without vertical displacement.

To the westward, on the lower slopes of Criffel Face, the rocks are coarse sandstone gravels (Maori bottom), dipping at low angles, or almost horizontal, at the level of the river, but on the middle part of the range having a high dip to the eastward. These are apparently followed (but in reality underlain) by blue clays with thin seams of impure lignite, and these again by slaty schistose breccias and gravel-beds formed of the harder material of the schistose rocks and a proportion of sandstone. Further up the range, and consequently lower in the sequence, beds of quartz gravel appear, either independently or alternating with the breccias and conglomerates already mentioned. What the beds more to the eastward and higher on the range are, has not yet been proved, and this at the surface (owing to the presence of schistose *débris* from the higher part of the range) is difficult to determine. These deposits contain cement stones derived from an older formation of quartz grits, and therefore in age are younger than those in the upper part of the Manuherikia, those bordering the Maniototo Basin, or in the Waitaki Valley, or the Tuapeka district. They are gold-bearing, and at this, their south-western, end have been prospected with such good results that a water-supply has been brought from the high lands above Criffel Face to work the deposit. When the ground was last visited by Messrs. Fraser (M.H.R. for the district), Gordon, Murray, and myself, sluicing was being carried on in the most southerly of the claims opened out, and the prospects shown us from the solid ground were such as should pay well, unless the wash has to be followed to great depth, involving danger from the instability of the ground on the upper side of the workings. As shown in the claims already opened out, while the beds generally have a trend along the range parallel to the Cardrona Valley and the upper part of Criffel Face, they are yet so much crushed and disturbed that frequently blocks of wash are found lying and trending at various angles to the general line of strike. So far as examined, and proved by the work already done, there seems to be no reason to doubt that a valuable discovery has been made, and that further prospecting will demonstrate the continuance of this auriferous belt to some distance along the range to the north-east.

*Criffel Face, opposite the Middle Part of the Cardrona Valley.*—Four miles to the north-east of the locality last described, on the same line, and about the same height above the low grounds of the Cardrona Valley, some prospecting in deep ground has been carried on. From what could be gathered respecting this from the prospector, the schistose wall on the eastern side of the auriferous beds was nearly vertical, while the auriferous-quartz gravels in contact with it dipped south-east at an angle of about 45°. The quartz-gravel outcrop was described as being about 4 chains in width, and on the north-west, or down-hill side, the beds rested on the sandstone gravels of the slope of the range and the low grounds of this part of the valley. Gold was obtained by the prospector, but not in quantity that was considered payable, and a mistake was made in continuing to sink in the highly-inclined strata in the hope of reaching the bottom of the quartz grits. If driving or trenching across the up-turned edges of the strata had been done the beds might thus have been proved from the Maori bottom to the schist rock at a comparatively small cost. As it is, the ground for the present has been abandoned, though possibly the success attending prospecting in the same beds at the south-west end of Criffel Face may induce further trial at this place.

*Criffel Face, near Mount Barker.*—The line of junction between the younger auriferous drifts and the schist rocks of the higher part of Criffel Face gradually, as it is followed to the north-east, descends to a lower level, and at the mouth of the valley, near Mount Barker, the junction is not more than 200ft. above the river. Here there are gold-workings on the lower slope of the range, the material of the wash being, apparently, sandstone gravels—at least, the greater bulk of what is being washed away is of this character.