

of the rock being all changed; but this decomposition has not been due to surface weathering, as is evidenced by the presence of large quantities of pyrites in a perfectly undecomposed state, and also by the fact that at the bottom of the Queen of Beauty shaft, 540 ft. from the surface, the same rock is met with, not differing in any way from that at Hape and Karaka Creeks. The same remarks about decomposition apply equally well to each of the numerous beds which overlie the breccias, and which are all more or less charged with pyrites, notably in the vicinity of the reefs. These breccias are overlaid by a fine-grained felspathic pyritous rock, the sandstone of the miners, which occupies the whole thickness to the surface in the Queen of Beauty Mine; and above this, I am informed, alternations of different classes of country occurred through the Crown Princess and Prince Imperial Claims, which, as the mines were abandoned, I have not had opportunity of examining. The next bed met with in ascending order, which we can carefully examine at present, is a hard green felspathic rock found at the bottom of the Waiotahi main shaft, 300 ft. from the surface: this rock has a dioritic appearance, but seems to be mechanically formed. Above this is a belt of so-called 'kindly sandstone,' and then a band of what is known as 'jointy' or 'shingly' country occurs, and consists of a fine-grained light-brown rock, which is much shattered and traversed by joints in every direction. Over this again, another belt of the 'good sandstone country,' similar to that described in the Queen of Beauty Mine, occurs, and through this numerous thin black veins (which are probably protosulphide of iron) may be seen traversing the rock in all directions, especially in the vicinity of the reefs.

"In the Cure Mine, towards the Waiotahi boundary, another belt of hard green rock, similar in character to [that found at the other place], comes in, and in its neighbourhood very varying classes of country are met with. At some places it is the 'good kindly sandstone country,' at others 'shingly ground,' and at others again the rock could not be distinguished in hand specimens from the best class of rock, but is more jointy, and for some reason or other does not appear to have been kindly for gold. This belt of hard green rock comes to the surface on the Waiotahi Lease, and dips through the Manukau and Cure Claims, passing from these through the lower levels of the Golden Crown; the rock met with at the bottom of the shaft, 170 ft. from the surface, being the same, but slightly decomposed, and more of a grey than a green colour; it is met with again in the Caledonian Claim at the 350 ft. level, and from there passes into the lower levels of Tookey's Claim, it being the upper part of this belt which cut off the gold in the Caledonian reef when it reached the boundaries of Tookey's Claim. Above this again the rich belt of sandstone country in which the Caledonian reef was worked occurs, and passes through the upper levels of the Manukau to the 170 ft. level of the Golden Crown, and the 350 ft. level in the Caledonian; from which point leaving the reef, in consequence of the dip of the country being at a less angle than the underlie of the reefs, it passes through Tookey's Mine above the 400 ft. level, and from there dips into the Kuranui Hill and Moanataiari Leases, where, owing to all the workings having been shallow, it has not been proved. A barren belt comes in above this, and cuts off the gold in the Moanataiari Mine at the 70 ft. level on the south-east side of the main tunnel, it being close to this level that the last rich patch was obtained; and from this point in ascending order through the Kuranui Hill Mine the country has frequently changed its character, and the reefs have been correspondingly patchy, no *shoots* of gold having occurred to the north-west of the tunnel, and the horizontal extensions of the patches having only varied from 30 ft. to 40 ft. or 60 ft. in length, and these have only been traced to a depth of 30 ft. below the tunnel level.

"The section of country which I have thus described is that in which the most important lodes hitherto worked on the Thames Goldfield occur, and it is to be observed that, although there are hard belts of country in this area (which is bounded on the north by a large slide or fault, following more or less an east-and-west course), no rocks are met with which could be considered as dykes. To the northward of this slide, which is marked on the surface by a depression crossing all the spurs, and the outcrop of which in the Moanataiari Creek is only at an altitude of 200 ft. above sea-level, a very different-looking class of country is met with, which has chiefly to be studied on the surface, in the Alburnia and New Devon Mines, and in the Moanataiari long tunnel, as but few claims are at present working elsewhere. This difference in character is, however, only due to the greater hardness of the rock, and to the fact that those agencies which have shattered and subsequently decomposed the beds lying to the southward of the main slide have not exerted their influence to the same extent on the northern side; and this is the more remarkable since those to the southward are lying at a lower elevation, and are indeed principally developed below the level of the sea. The bearing of this fact will be particularly evident when I come to discuss the question of the reefs. The approximate strike of the rocks to the southward of the slide is north-north-east, and they are dipping west-north-west at an angle of about 1 in 2, as nearly as I can determine by the observations it is possible to make. The rocks to the north of the slide do not appear to differ from these either in strike or dip.

"Several hard dioritic belts of rock may be traced on the surface in this area, and have been cut again in the workings to which I have alluded. One of these can be traced from the edge of the main slide, close to where the Moanataiari winding-engine is situated, up the Moanataiari Creek, which it crosses at the upper end of the Dauntless Claim, and from there passes through the spur to the Luck's-All Claim, and thence to the upper part of the Waiotahi Creek; another closely follows the ridge between the Moanataiari and Shellback Creeks, passing to the south-east of the trig. station on the New North Devon Lease, and both of these belts have been cut in the Alburnia Mine. A third belt, lying to the south-east of these two, is met with in the eastern cross-cut from the Moanataiari tunnel, and crops out at the surface in the Waiotahi Creek, where it forms the walls of the big reef for some distance, and, crossing the creek, rises the spur on the south-east side. Yet another belt can be traced at the Tararu Creek end, where it is seen occurring as disconnected patches on the tops of the spurs on each side of Tinker's Gully, looking on the surface like parallel