

triangle, at points sufficiently wide apart to afford a sound basis for determining the exact lie of the strata. After this had been done an accurate map of the district could readily be prepared, showing the position the different beds of rock occupy in existing mines, and predicting, within very narrow limits, where they would occur in country which has not yet been worked; but it would entail a very considerable amount of work in the mines, which could be carried on simultaneously with the boring. Beyond this, the diamond-drill cannot, it appears to me, be used to advantage, unless locally in the mines, where horizontal boring-machines may give very valuable information; but their use should be directed by a careful compilation of all the information which can be obtained in the mines at present at work, on a map and sections showing the strike and dip of all the reefs, the positions of the various belts of country, and the slides which have been met with in the workings, together with the throw of each and the angle of its underlie. This would entail about two years' work, to be done at all thoroughly, and unless done in a perfect manner would be of no value whatever, as it would give very little more information than I have already been able to compile. The country to the northern side of the slide could be mapped in a similar manner without the aid of the diamond-drill, since the outcrops on the surface could be traced, and the workings in the Alburnia and other mines utilised for obtaining accurate dips. The horizontal boring-machine could be employed at the end of the Moanataiari long drive. To prove the auriferous character of the reefs the diamond-drill would be of little value.

"The Te Aroha Range does not consist of an andesitic or trachytic mass flanked on the east by a belt of auriferous country, but, as shown in section, is composed of a series of stratified tuffaceous rocks, which correspond with those at the Thames, and which are continuous through the mountain and on to the ranges on the opposite side of the Waiorongomai River.

"The seams of bituminous coal mentioned are those which occur in a branch of the Mata Creek, near Tapu, and, so far as yet proved, are not of any very great value. They occur in the Lower Miocene formation, interstratified with tuffaceous sandstone, marl, and breccia, similar to the Mahurangi deposits. The greatest thickness reported is 2 ft., and the greatest I have observed is 2 in.

"I have thus brought together in as condensed a form as was possible the notes which I have been able to gather in examining the goldfields of the Cape Colville Peninsula. I have carefully avoided any assumptions throughout, and have only recorded those points which have been established by close observations of the managers, and indicated the channels in which I consider these observations would be most advantageously directed in the future. In concluding my report, I may be allowed to express the opinion that nothing I have seen tends in any way to limit the occurrence of gold in depth, but rather should I expect that quite as rich deposits as have yet been found will again occur in the deeper workings. Moreover, the evidence I have been able to gather leads me to suppose that the occurrence of auriferous reefs in depth will not be limited by the boundary of what is now known as the auriferous formation, but they will be traced down into the slates at places where the physical characters of these rocks are favourable for the formation of reefs, and for the occurrence of gold. The difference between the gold-bearing and non-gold-bearing beds of the slate series can be well studied at the Tokatea Mine and Tapu."\*

In 1883 I reported on the geology of Cabbage Bay district, Cape Colville, and pointed out the distinction between the rocks of Beeson's Island and the older volcanic rocks of that part of the Peninsula. I also for the first time described the sequence of the coal-bearing series, as seen on the coast-line at Torihine, and collected the fossils from the calcareous rocks forming the higher members of the series. The report, chiefly descriptive of the beds dealt with, will be incorporated in another part of this. In 1883 my explorations did not extend south along the coast-line beyond Tawhētirangi, and consequently I was unaware of the fact that the slates are present in that direction almost to Paparoa. The main area of the slates also do not extend to and beyond the source of the central branch of the Umangawha River, otherwise the sketch-map accompanying the report of 1883 is a fair representation of the surface areas of the different formations present in the district. The classification adopted by me, in so far as the naming of the rocks are concerned, is in accordance with the then state of knowledge and the terms in use at the time; even now, as regards a correct knowledge of the nature of the volcanic rocks and their nomenclature, we are not in a greatly better position than at that time.

"The following notes on the geological formation of the Kuaotunu mining district are by James Park, Esq., F.G.S., at that time Director of the Thames School of Mines:—†

'It has often been asserted that the Hauraki Peninsula is a goldfield from one end to the other, and the numerous discoveries of the last few years would certainly seem to justify this conclusion. The wide gaps which at one time existed between the older-established goldfields are being gradually filled up, while the boundaries of all the fields are being continually extended.

'Perhaps the most important find of late years was the discovery of payable gold at Kuaotunu, a little over three years ago. Since that date a large amount of money has been expended in the preliminary work of prospecting and opening the mines, erection of batteries, and other necessary works; and as a result this field has now taken its place as a steady gold-producer.

'Kuaotunu is situated on the east-coast side of the Peninsula, on the neck of the short peninsula lying between Mercury Bay and Whangapoua Harbour. It is connected with Coromandel by a bridle-track, and there is regular communication with Auckland by a steamer service twice a week. The port suffers the disadvantage of being an open roadstead, and this is a difficulty which it will be very costly to remedy. The waterway has, nevertheless, been an inestimable boon to the place, and it is doubtful if without this it would have been able to survive the troubles which beset the early stages of its existence.

\* Geological Reports, 1882, pp. 4-51.

† Mines Reports, 1893, pp. 93-97.