

The rhyolites that trend east and west, and bound the productive part of the field to the north, on the south side of the belt are of a brecciated character. In what appears to be the middle part they constitute a light-coloured rock, not very hard and frequently showing well-marked flow structure. The northern part of this belt, as seen at the compressor, more than any other of these rhyolites resembles quartz porphyry. These rocks, where they were examined on the road to Kennedy's Bay, are outside the limits of the Tokatea Field, and had not called for mention but for the fact that in their western extension they form the northern boundary of the field.

Of the felsite tuff, soda felsites, or ceratophyres characteristic examples may be obtained from all the levels of the Royal Oak and Tokatea Mine from No. 7 to and including No. 3. It also outcrops on the west slope of the range on Harbour View Claim, and immediately north of the saddle. The rock is fine-grained and a yellowish-white in No. 7 tunnel. In No. 6 it has much calcite in connection with it, more especially in or adjacent to the reefs worked. In No. 5 level it is a greenish-grey rock, with minute spots of a lighter colour, and much resembles snakestone or Water-of-Ayr stone.

In No. 3 level it is a creamy-coloured, seemingly amorphous rock, much brecciated, and in Harbour View the brecciated fragments are smaller and the rock of a greenish tint. On the east side of the saddle, in the Hauraki Associated Mine, greywackes and fragmental rocks are common; but the green, mottled felsite is also present, and dykes of crystalline porphyritic rocks. One such dyke is seen seven or eight chains from the saddle on the road to Cabbage Bay, and at least two others lie lower on the slope before reaching the first waterfall, where the road to Kennedy's Bay crosses the creek, between which and the rhyolite there are at least two other very massive outcrops of dark-grey, coarsely porphyritic rock; and, finally, that which lies beyond or east of the north and south rib of rhyolite has also to be taken into consideration.

It would be tedious to enter on a description of the same rocks and dyke-intrusions in the middle and southern part of the Palæozoic area, which terminates on the Pukewhau Saddle and on the Matawai. Suffice to say that the felsites in Tiki Creek are identical with those on Tokatea Hill, and that in less than half a mile east and west there are nineteen massive outcrops of dyke rocks to be seen in the bed and banks of the creek.

With the exception of the Big Reef, the lodes on Tokatea Hill are not of great size, and the auriferous lodes in the space between the north and south rhyolite belt and the Big reef trend west till they make junction on the foot-wall of the Big Reef. Some of them have been very rich in gold, and have been worked continuously since the opening of the field.

The gold-bearing veins of the Tokatea Goldfield are therefore in igneous rocks, interbedded between the higher and lower parts of the carboniferous formation, and are in no way connected with the tuffs and lava-flows that carry the reefs in the low grounds to the west, from Scotty's Hill to Coromandel, or on the Thames or the goldfields of the southern part of the peninsula.

Proofs of the correctness of this statement are afforded by the unconformable relation of certain strata resting on the Carboniferous rocks on the Pukewhau Saddle and in the Waiiau Valley, which unconformable rocks, of probable Triassic age, contain the proceeds of denudation affecting the Tiki Creek and Tokatea rocks. Apparently Maclaren did not note the great number of dykes that are to be seen in the valleys of Cadman's and Tiki Creeks, and when he does refer to them he thinks they belong to the Beeson's Island group of Miocene age. Yet in the paper above mentioned he says, "Further evidence of the existence of contemporaneous volcanic outbursts are supplied by the interbedded ancient lava-flows of the Tiki Creek, the Tokatea Hill, and Koputanaiki Creek. In the Tiki Creek they are seen to be both overlain and underlain by black, slaty shales, and to have a dip corresponding with that of the shales."

Maclaren made microscopic sections of some sandstones obtained from a little north of where Mill Creek crosses the Thames-Coromandel Road, and demonstrated the fact that these sandstones are largely formed of material derived from pre-existing volcanic rocks; but he does not show that the rocks at Mill Creek are unconformable to those of Tiki Creek or Tokatea Hill, a relationship which I have shown does exist, evidences of which are to be seen on the Pukewhau Saddle and on the Mercury Bay Road, in the Waiiau Valley, also in the cuttings of the Thames-Coromandel Road on the south slope of the range between Coromandel and Manaia Harbours.

Mr. Maclaren directed my attention to the crystalline material of the sandstones near Mill Creek, and subsequently I satisfied myself that the red shales, &c., of the Pukewhau Saddle were stratigraphically unconformable to the Carboniferous beds of the Pukewhau and Tiki Creeks. Later in the season I discovered the conglomerates exposed in the road-cuttings on the descent, from the north, to Manaia, and in these I found pebbles, up to  $1\frac{1}{2}$  in. diameter, of various of the dyke rocks of Tiki Creek and Tokatea Hill, and rhyolites resembling those of Tokatea Saddle, and practically identical with the rhyolites further on the road to Kennedy's Bay, and at the Royal Oak Compressor, further to the north-east on the same road. There could be no doubt that these conglomerates were at least of Triassic age, and some fossil fragments confirmed me in the belief that this was the actual age of the beds.

How far these conglomerates may represent material derived from the diorite and dacite dykes in the west spur of Moehau may be uncertain, but from the correspondence of many of the rocks from Moehau with the Post-carboniferous, yet Palæozoic, dykes of Tokatea Hill, Cadman's and the Tiki Creeks, it is reasonable to suppose that all were intruded at the same time or during the same period.

It but remains to say that the yield from the Tokatea Goldfield, which I cannot state in ounces, has been a large amount, and that in this instance it has proved that mining was profitably carried on in the Palæozoic rocks of the Hauraki Goldfields, and there is still hope that the same rocks will yet be found to contain deposits as rich as those that have made Tokatea Hill famous in the history of the Coromandel Goldfields.