

On the lower slopes of the main divide along the valley of the Umangawha River the slates are generally fine-grained and moderately thin-bedded, but sandstones in thicker beds are not uncommon, and at places predominate. Along the east side of the valley thick reefs of flinty quartz resembling hornstone show in the banks of several of the tributary streams or main branches of the river. On the coast-line between Torihine and Papanoa, and in the mountains south-east and east to within a mile of the track from Coromandel to Cabbage Bay, the rocks vary from fine-grained slaty breccia and sandstones with small fragments of slate to the mudstones and more calcareous rocks already mentioned. The strike of these rocks in the Cabbage Bay district varies between N.N.E. and N.N.W., and the prevailing dip is towards the west at angles from 45° to vertical.

Towards the head of Cabbage Bay these rocks rise to between 400 ft. and 500 ft. above the sea before they are overlain and obscured by rocks of the volcanic series, but as the range is followed to the south they attain a higher elevation, and reach their maximum of 850 ft. between the end of the Tokatea Range and the old track from Cabbage Bay to Tokatea and Coromandel. On the opposite, north-western side of the valley they show mainly on the shore of the bay, and in an isolated hill opposite Mr. Evans's homestead, and never on this side reach more than 400 ft. above the sea.

In the Kennedy Bay district coarse gritty sandstones, slaty breccias, and finer-grained sediments, stratified in thin or thicker beds, strike northerly and dip to the westward at moderate or high angles. The outcrop of these rocks is generally in the low grounds along the valleys of the different creeks coming from the north and north-west. At the head of the bay, immediately beyond the flat lands, the slates form a range of hills flanking the lower slopes of the Tokatea Range, and the same line is continued northward along the lower slopes of the main range to the foot of the spur by which the track from Kennedy Bay to Cabbage Bay ascends the range. This approaches the water-divide by way of the valley of the Mataiterangi Stream, on the east side of which the slates appear also, and form the terminal spur of the range between that and the Whare-roa Valley further to the east. There is at the base of the hills on the south side of the valley leading from Kennedy Bay to Tokatea a small isolated outcrop of slate rock, which is exposed in a cutting of a tram-line. This is opposite and in continuation of the southern end of the flanking slate range of hills that lie at the eastern foot of the Tokatea Range, but half a mile of alluvial flat lies between this last and the main outcrop of the slate rocks. There is nothing peculiar to note respecting these rocks in the Kennedy Bay district, except it may be their coarse, gritty, and brecciated character, as seen on the north side of the bay, a condition of deposit that is almost if not quite paralleled near Papanoa on the west side of the Peninsula.

Elsewhere on the East Coast I know of no rocks belonging to this formation till the Kuaotunu Peninsula is reached, nor on the west shore of the Peninsula till reaching the southern side of Coromandel Harbour.\* No slates, except those on the low grounds at the head of Kennedy Bay, are met with at the surface on the east slopes of the Tokatea, Success, or Tiki Ranges. Rocks of the Maitai series are, however, met with in various mine workings and adits driven from the east side under the eastern slope and crest of the Tokatea Hill; but all such openings have had to be made through a variable thickness of volcanic rock to reach the slates forming the core of this part of the range. In the lower or No. 7 level of the Tokatea Mine some 300 ft. of volcanic rock had first to be passed through, and in the higher levels, Nos. 6 and 5, considerable distances had to be driven before reaching the slaty rocks. The No. 7 level of this mine has been driven for fully 2,000 ft. till it reaches forward to and into the Big Reef showing on the western slope, and the rocks passed through illustrate the finer-grained of the different strata belonging to this formation. Owing to the state of the drive and the decomposition which has taken place before and since the driving of the lower tunnel, it is not easy to say exactly where the volcanic rocks end and those of the Maitai series begin, but on passing this debatable land the identity of the sedimentary rocks is easily made out. The rocks excavated from and seen in the tunnel closely resemble the so-called felsite of Rocky Point, near the Thames, and with these are associated darker-coloured sandy muds in which the lines parting the different kinds of sediment are abundantly apparent. Towards the inner end of the tunnel the rocks are drossy greasy shales, evidently considerably altered, owing to their near vicinity to the Big Reef. Similar rocks, as dark mud-stones, occur not so far forward in the tunnel, but these have not been crushed nor slickensided so as to produce the glossy appearance of those met with further in.

Lime is common in these rocks, and, as calcite, occurs in strings and veins throughout the tunnel where the slates are present. For the greater part of the distance driven the course has been along the line of the Tokatea Reef; and in this, at all levels up to the 4th, calcite is abundant in the lode fissure, often in greater bulk than the quartz itself. The so-called felsite or felsite-tuff is calcareous, as also are the darker-coloured rocks, hence the amount of carbonate of lime found within the walls of the lode. The felsite-tuff, the name now decided on by Professor Hutton for this particular rock, so closely resembles that of Rocky Point that its identity cannot be doubted, and any further remarks may properly be deferred until dealing with these rocks in that locality.

In the different levels on the east side of Tokatea Hill the slates are met with up to about 1,000 ft. above sea-level. In the No. 3 and higher levels only volcanic rocks are found. Though stratification is evident, the rocks are much bent and contorted, and the direction of strike can only be stated as being in a northerly and southerly direction, with a varying dip to the westward. Therefore the dark drossy beds that lie furthest to the west are above the felsite-tuff and do not correspond to those seen on the beach at Rocky Point, near the Thames.

\* "I have failed to identify the rocks described as green indurated sandstone, interstratified with siliceous slates, containing mundie, which Sir James Hector points out as the first rock met with in ascending the Watikooti Stream on the east side of the range on the way from Whangapoua to Coromandel." (Geological Reports, 1870-71, p. 93.)