

members of this series has been derived from the destruction of volcanic rocks, more especially the coarser breccia bands, which, however, are distinctly stratified, and sometimes contain large fragments of partially-carbonised wood, showing that the conditions of deposition were probably estuarine.

“In his paper ‘On the Rocks of the Hauraki Goldfields,’ read before the Geological Section of this Association at last year’s meeting at Sydney, Professor Hutton describes a number of igneous rocks which are said to come from Waiotahi Creek, Karaka Creek, and other places on this goldfield. He mentions hornblende and enstatite-dacites, hornblende-andesite, augite-andesite, and enstatite-andesite. This is a subject to which I have devoted some study, and I regret that I am unable to confirm this author’s conclusions. As a result of the closest investigation, I have been unable to find any of the above rocks *in situ* within the boundaries of the goldfield. Rounded boulders of hornblende and augite-andesites are common enough in the beds of the Waiotahi and Karaka Streams, but they are obviously derived from the overlying breccia and tuff formation, which, as I have pointed out, is often intruded by igneous dykes, and in places contains huge angular masses of solid lava many feet in diameter. I have also examined many of the so-called dykes, both in the mines and on the surface, and have no hesitation whatever in stating that they are all of clastic origin. The rocks composing these hard bands are generally extremely hard, and of a dark bluish-grey or green colour when obtained in the solid. They are highly felspathic, and hence very subject to decomposition near the surface, and usually contain disseminated nests and grains of iron pyrites, and, not uncommonly, well-developed prisms of hornblende. They are in fact, indurated tufas of fine texture, the true character of which can only be determined by a close study of their disposition and arrangement in the field.

“3. *Palæozoic—Te Anau Series.*—This formation forms the floor or basement rock of the peninsula, but it does not reach the surface within the limits of the Thames Goldfield proper, nor has it been reached in any of the mines. It crops out on the shores of the firth, about a mile north of Tararu Stream, forming Rocky Point, whence it extends eastward to the upper part of Waiohanga Creek. It consists of blue and grey banded slaty shales, which are followed by yellowish grey siliceous mudstones, which seldom show distinct stratification, but are jointed in all directions, the joints being often stained or filled with yellow ochereous clays. Professor Hutton in 1869, and Mr. Cox in 1882, spoke of this mudstone as a felsite. In 1887 the former re-examined this point, and in his paper on the ‘Rocks of the Hauraki Goldfields’ states that he is now convinced of its clastic origin, a conclusion which I can fully indorse.

“These shales and mudstones are of uncertain age, as no fossils have yet been found in them, but they most probably belong to the Palæozoic period. At any rate, they bear a strong resemblance to the rocks forming the Taupiri Range, on whose flanks occur fossiliferous rocks of undoubted Triassic age.

“At the Thames, the gold-bearing veins occur in the felspathic and tufaceous sandstones of Eocene age; at Tapu and Coromandel goldfields they occur both in the tufaceous sandstones and in the underlying slaty shales and mudstones. At Coromandel, for instance, we have the celebrated Kapanga Mine in the tufaceous sandstone, and the Tokatea and Bismarck Mines in the slaty shales, near their junction with the overlying tufaceous sandstones. On the coast between Waikawau and Tapu the slaty shales are intruded by eight dyke-like masses of hornblende-andesite, which are well exposed in the road-cuttings.

“*Future Prospects of the Thames Goldfield.*—Up to the present time the mining operations on this field have been almost exclusively confined to a small area on the foreshore, embracing altogether little more than a square mile of country. I have already pointed out that the auriferous series, with its gold-bearing veins, possess a general north-north-east or north-east strike, and a reference to the accompanying map will show that it passes as a narrow belt, about a mile and a quarter wide, north-eastward to the upper parts of Tararu and Otonui Streams, and thence onward in the direction of Mercury Bay. I am fully convinced that the prospects of finding payable gold in the forest country just indicated are sufficiently encouraging to warrant the thorough exploration of that portion of the field. The country is broken and heavily timbered, but these obstacles could easily be overcome by a judicious expenditure in making pack or even blaze-tracks in the more inaccessible parts.”

In the volume of papers and reports relating to minerals and mines for 1894, published by the Mines Department, New Zealand, Mr. Park has a further paper “On the Geology, Resources, and Future Prospects of the Thames Goldfield,” from which, as his latest views on the questions treated of, the following extracts have been taken. In this Mr. Park says:—

“*Rocky Point to Kauaeranga River.*—The basement rock of the district is exposed as a small patch on the beach between high- and low-water mark, in the first small indentation to the north of the fishing-rocks at Rocky Point. Here it consists of blue and yellowish-grey slaty shales, but on the coast-road north of Waikawau these are found to be associated with slaty breccias and grey-wackes. The blue shales are somewhat broken and disturbed, the dip varying from south-south-west to west-south-west at flat angles varying from 26° to 30°. In former years the outcrop was over a chain square in extent, but at the present time it is only a few square yards, having become covered up by recent accumulations of beach-sands and gravels. Another small outcrop of the blue slaty shales is exposed in the bed of Waiohanga Creek, about half a mile distant on the line of strike, and at an elevation of about 400 ft. above the sea.

“A few chains north of Rocky Point the slaty shales are followed, apparently quite conformably, by a great thickness of pale-yellow or grey-coloured siliceous shales or mudstones, which rise into steep rocky cliffs and form Rocky Point itself, as well as the outlying fishing-rocks and islets. These mudstones are much jointed and broken, and show evidences of having been at one time much disturbed and crushed. They exhibit no distinct lines of bedding or stratification, but in a few places the lines of different coloured materials would indicate a dip to the south-south-west, or