

widespread alteration and decomposition which all the rocks exhibit. Dykes associated with the sedimentaries are more easily detected.

By far the largest and most conspicuous intrusive belt in the whole area is that which forms Table Mountain and a portion of the flat-topped range immediately to the north-eastward. The rock, which is a hyalopilitic hypersthene-andesite of black lustrous appearance, shows marked columnar structure, and, being intrusive into rhyolites, is probably the youngest or one of the youngest of the igneous rocks of the peninsula.

On the western coast-line between Waikawau and Te Mata streams several dykes of hornblende- and hypersthene-andesites intrude the Jurassic sedimentaries; while similar rocks and others of more crystalline character—porphyrites—occur within the drainage-areas of Tapu and Manaia streams.

(6.) *Loosely Consolidated and Unconsolidated Débris.*—The fluvial muds, sands, and gravels which form the flood-plains of the various streams are the most important of the deposits coming under this heading; while next in order of abundance are the littoral deposits of the eastern and southern shores of the Firth of Thames. Brief reference has been made in the physiographic notes to the localities where the major areas of such deposits occur.

Economic Geology.

The economic branch of my work within that portion of the Thames Subdivision already examined may be briefly discussed under the following headings:—

- (1.) Gold-silver quartz veins.
- (2.) Coal.

(1.) *Gold-silver Quartz Veins.*—The only metalliferous deposits which have been or are now being worked within the area already examined are gold-silver quartz veins, and, in one or two instances, the small patches of auriferous fluvial gravels which have resulted from their erosion. The payable veins occur in the Tertiary volcanic rocks of the "First Period," and much less frequently in the underlying sedimentary rocks. The quartz veins associated with the younger volcanics in this particular area are of no economic importance.

The andesites and dacites in the vicinity of the veins have invariably undergone alteration to the propylitic facies, while the sedimentaries also exhibit alteration due to the same agencies as those which have effected the propylitisation of the volcanics.

Special attention has been given to the mapping of the auriferous belts occurring within that portion of the subdivision examined in detail. It would appear from indications which have been noted that the discovery of payable auriferous areas altogether independent of those already known is unlikely.

Manaia.—Within the Manaia Valley the veins occur in the stratified rocks of the Tokatea Hill Series, and in the propylitised andesites which here overlie them. The stratified rocks at Manaia, with which are associated numerous intrusives, bear a striking resemblance to those which constitute the country rock of the Royal Oak and neighbouring mines of Tokatea Hill. In the Golden Hill (Old Victoria) Mine, on the south side of the lower Manaia Valley, rich "specimen stone" has been obtained from time to time, but, as further development would entail the cost of shaft-sinking and pumping, this prospecting venture has been abandoned. It would seem that the Manaia Valley in general has not received the attention from those interested in mining that the nature of its rock-formation and its general prospects warrant.

Waikawau.—Southward of the Manaia the country lying between the western coast-line and the crest of the main range affords no mineral indications until the upper valley of the Waikawau is reached. Here detrital gold is obtainable over a limited area of country extending from McLaughlin's Freehold to Hunt's Creek, on the north side of the valley. Near the right bank of the Waikawau on McLaughlin's Freehold the hanging-wall portion of a vein or mineralised zone of unascertained dimensions, associated with grits and argillites, is exposed. A general sample of the available material, which was highly pyritised, showed on analysis,—

Gold	0 oz. 4 dwt. 10 gr. per ton	} Value, £1 4s.
Silver	2 oz. 13 dwt. 12 gr. ,,	

Further prospecting of this vein is advisable, considering that along its supposed northerly strike very finely divided gold is obtainable from the hillside débris as far as the headwaters of Wakarewa Creek. In Hunt's Creek the marks of the prospector of the early days are noticeable; prospects of gold obtainable from the creek-débris led to exploration of the valley, without, however, payable results forthcoming. Compact vein-quartz is here rarely encountered, and mineralisation seems to have been mainly confined to silicification of the andesites along certain narrow zones of fracture, with the introduction of pyrite and to a less extent of stibnite. The highest assay obtained for gold-silver (5s. 10d. per ton) was afforded by a 10 ft. vein formation crossing the creek at the waterfall about half a mile from the junction of Hunt's Creek with the main Waikawau Stream.

Te Mata.—In Te Mata Valley one or two small streams entering from the south, and incising the Jurassic grits and argillites of the lower part of the valley, carry a few fine "colours" of gold, but the main auriferous area is confined to the propylitised andesite belt of Gentle Annie Creek and its vicinity. This creek, which was in the early days sluiced almost to its head, afforded a considerable amount of detrital "specimen quartz" and gold, but all efforts to find the source of the precious metal have proved futile. A large, well-defined vein, striking about north and south and carrying quartz of unfavourable flinty appearance, is traceable within the creek-valley for a distance of at least 25 chains. Assays of general samples from several portions of the vein