

The only really large area of low-lying country (32 square miles) lies in the extreme south-western part of the subdivision, and is but a portion of the coastal fringe of the comparatively extensive plains of the Thames and Piako rivers. Small isolated areas of flat land occur as flood-plains along the main streams of the subdivision, and also as narrow belts, which here and there fringe its coast-line.

The coast-line of the part of the Hauraki Peninsula included in the Thames Subdivision is fairly straight, showing no deep indentations, and consequently natural harbours are poor. The safest anchorage is afforded by the tidal portion of the Thames River, in which there is a considerable depth of water.

#### *General Geology.*

*General Classification of Rock-formations.*—The following classification of the rock-formations occurring in the portion of the Thames Subdivision already examined is based on that adopted in Bulletin No. 4, dealing with the Coromandel area. Further petrographical examination of typical rock-specimens is, however, necessary for the more precise delineation of the boundaries of certain of the volcanic formations:—

- (1.) Pre-Jurassic and Jurassic stratified rocks.
- (2.) Tertiary volcanic rocks of the "First Period."
- (3.)       "       "       " "Second Period."
- (4.)       "       "       " "Third Period."
- (5.) Intrusive rocks of various periods.
- (6.) Loosely consolidated and unconsolidated debris.

(1.) *Pre-Jurassic and Jurassic Stratified Rocks.*—Rocks exhibiting megascopically a striking lithologic resemblance to certain of those included in the Tokatea Hill Series of the Coromandel area, and therefore tentatively correlated with them, are apparently the oldest beds exposed in the Thames Subdivision. These rocks consist of grauwackes and argillites, containing in places interstratified beds of altered rhyolitic material. They are found in the upper valley of the Manaia Stream as a small exposure continuous with an area mapped in the Coromandel Subdivision, and further southward as isolated patches in the valley of Tapu Creek, and at Rocky Point near Thames. These rocks, which have yielded no fossils, are apparently unconformably older than the Jurassic sedimentaries next to be described.

The Jurassic sedimentaries consist of fine conglomerates, grits, and argillites (Manaia Hill Series of Bulletin No. 4), and cover a fairly large area extending southward from the Manaia Valley to and a short distance beyond Te Mata Stream. The rocks are well exposed on the actual coast-line, and at several localities between Kirita Bay and Waikawau have yielded Jurassic fossils (*Belemnites* sp.) similar to those described from Manaia Hill (Bulletin No. 4). The fine conglomerates characteristic of the series again occur a short distance to the south of Rocky Point, Thames.

All the stratified rocks above described have undergone considerable folding, and are disposed at high angles. Followed eastward from the coast-line they are found in places to attain an elevation of about 1,400 ft. before passing under the Tertiary volcanic rocks which form the main range.

(2.) *Tertiary Volcanic Rocks of the "First Period."*—As in the Coromandel Subdivision, the volcanic rocks of the "First Period" are those of greatest importance, containing as they do almost all the payably auriferous quartz veins. These volcanics consist wholly of andesitic and dacitic tuffs, breccias, and lavas, no rhyolitic rocks referable to this series having as yet been identified in the Thames area.

As regards the distribution of these rocks, it is here sufficient to remark that over a considerable stretch of country from the headwaters of the Manaia and beyond the Town of Thames, they either flank or overlie to unascertained depths the Jurassic and Pre-Jurassic sedimentaries. Continuous with this major area they have extension in places to the summit and eastern flanks of the main range.

(3.) *Tertiary Volcanic Rocks of the "Second Period" (Beeson's Island Group).*—These rocks, which are all andesitic or dacitic in character, occur as lavas, tuffs, breccias, and agglomerates. Heavy fragmental material (agglomerate) is rather characteristic of the pyroclastics of this series. The lavas, on petrographical examination, are found to be on the whole less crystalline than those of the older period—that is, they more frequently exhibit the hyalopilitic type of groundmass.

Within the area already examined these rocks are found on the western side of the main range in the hilly country lying beyond the northern limits of the watershed of the Waikawau River, and again in the upper valleys of Te Mata and Tapu streams. On the eastern side of the divide they have considerable development within the watershed of the Waiwawa River and the Unuaroa Stream, and from here are probably continuous across the main divide into the valleys of Te Mata and Tapu streams.

(4.) *Tertiary Volcanic Rocks of the "Third Period."*—The rocks grouped under this heading are altogether acidic in character, consisting of rhyolitic tuffs, breccias, and lavas.

Within the area examined they are confined to the eastern side of the main water-divide, extending from the valley of the Unuaroa in the north to and beyond the trigonometrical station of Table Mountain in the south. They overlie an older eroded surface of the older volcanics, from which they are separated in many places by seams of impure coaly material and partially carbonised wood. The rhyolitic lavas and tuffs show more or less stratification, and are generally disposed horizontally, or at low angles to the horizon.

(5.) *Intrusive Rocks of Various Periods.*—Intrusive rocks of semi-basic character associated with the extrusive andesites are unrecognisable, or recognisable only with difficulty. This is mainly due to the general similarity in character of the intruded and intrusive rocks, and to the