

III. *Economic Geology.*

The economic geology of the area examined during the last field season may be summarized under the following headings:—

- (1.) Alluvial Gold.
- (2.) Metalliferous Quartz Veins.
- (3.) Coal.
- (4.) Petroleum.

(1.) **ALLUVIAL GOLD.**—In bygone years a large amount of gold has been obtained by alluvial miners within the area examined during the past twelve months; but at the present time alluvial mining, with the exception of the dredging branch, is in the same decadent condition as in most other parts of Westland. Ground or hydraulic sluicing is still being carried on at a number of places, notably Nelson Creek, Montgomery's Terrace, and Healy's Gully. Abandoned workings may be seen in the valley of Blackball Creek near Blackball Township, in Ford Creek Valley, between Blackball and Roa, in Soldiers Creek, and to the southward of these localities in several streams descending from the Paparoa Range to the Grey River. Near Nelson Creek Township (Hatters) a small party is successfully working the bed of Gow Creek by a paddocking process, a water-lift being employed for the raising of the washdirt to the sluice-boxes. At Darkies' Terrace (near Point Elizabeth), near the Nine-mile Creek, in the valley of the Ten-mile Creek, and further north, are diggings now almost or quite abandoned. Near the Seven-mile Creek a little gold is still being obtained. In the valley of the Ten-mile Creek, somewhat outside the subdivision, is King's Terrace, where some gold was obtained in past years. The bed of the Ten-mile Creek and the small adjoining flats are even yet being worked by Perry and party. There are also old alluvial gold-workings in Upper Blackball Creek beyond the subdivision boundary. One sluicing claim is still at work near Williams's old hotel.

In the Grey Valley dredging has met with some success. In the Nelson Creek district the Pactolus, Nelson Creek, and New Trafalgar companies, more particularly the first-named, have been profitable concerns. The Notown dredge, at work in the stream-valley of the same name, has also been successful in its operations. The North Beach dredge, operating on the narrow coastal plain north of Greymouth, is also stated to have paid its way. In the Grey River itself, in Red Jack's Creek, in Blackball Creek, near its mouth, and in the lower course of Moonlight Creek, the dredging operations undertaken a few years ago have not proved profitable.

(2.) **METALLIFEROUS-QUARTZ VEINS.**—During the past season quartz veins were frequently observed in the Greenland rocks, but in no case was a vein containing values of any consequence identified. The gold-antimony vein at the head of Langdon's Creek mentioned in last year's report was not revisited. A little lower down the creek is the Victory Reef, worked by Curtis Brothers and others during the years 1894 to 1899 with profitable results. Northward, in Bray Creek, on the mountain-slopes north of Roa, near the head of Smoke-Ho Creek, in German Gully, and near Healy's Gully, are a number of quartz veins, most of which do not exceed 1 ft. or 18 in. in thickness. The only metallic constituents identified in any of these veins were oxides of iron, iron-pyrites, and zinc-blende. Several samples submitted for assay for gold and silver gave negative results. A sample obtained from a prospector, however, showed some free gold.

In Blackball Creek, just outside the subdivision, and a little above the junction with Smoke-Ho Creek, a quartz lode several feet in thickness outcrops in the stream. This is the Minerva lode, worked some years ago with almost payable results. The stone, it is said, contained on an average 7 dwt. of gold per ton, of which 5 dwt. was recovered in the battery treatment.

Some miles to the northward of where the Paparoa Range passes out of the subdivision is an area which twelve or thirteen years ago became the scene of considerable mining activity, and was by many thought likely to become a notable goldfield. A large quartz lode known as the Cræsus Reef can be traced across the crest of the range in this area. It is joined by small leaders, one of which at least is stated to have carried rich gold. The Cræsus Company built a battery in the valley of the west branch of Blackball Creek, and from it constructed a very fine aerial tram to the crest of the range. Their operations, however, resulted in failure. Of all the other claims pegged out in the vicinity of the Cræsus, only one, the Taffy, has survived to the present day. After a somewhat chequered career the Taffy claim passed into the hands of a small syndicate, which is now working it with some measure of success. The workings are situated about a mile south-west of the termination of the old Cræsus tram, and deep down in the Ten-mile Creek Valley. Access is given by a well-graded horse-track, which starts near Blackball, and, after reaching the Cræsus, is continued to a point above the Taffy workings. From the horse-track a foot-track leads to the mine itself. The present workings consist of an open cut on a peculiar formation, consisting of a belt of argillite and fine-grained grauwacke ("slate" of the miners) about 60 ft. in width, and intersected by numerous small quartz veins occupying joint-planes. The quartz is very rusty, and shows numerous colours of gold, mostly associated with the iron-oxide. The formation is thus a kind of stockwork. It strikes north-west and south-east, and dips as a whole steeply to the north-east. It is said to have been traced up the hillside for 800 ft., but downhill towards the Ten-mile Creek it cuts out in some unexplained way—perhaps through faulting. Drives also have been put into the formation for short distances, the longest being 130 ft. Some of the loose mullock resulting from the operations of former owners has been sluiced with good results. At present the material from the face, after being hand-picked, is lowered to a battery of five light stamps situated on the bank of the Ten-mile Creek, and worked by water-power. Here the gold content is saved by means of amalgamated copper plates.