

with the main stream strikes through the hills across the upper part of Tinker's to the Waiotahi, and is well seen on the new road, then to Punga Flat and Dixon's Hill. This crosses the watershed into that of Karaka Creek and also into that of Hape Creek, where, in the latter case, the breccias begin above the Anchor Claim and extend to near the forks of the creek. Yet another band of fragmental rock lies to the east and north before reaching the Lookout Rocks.

These various bands of fragmentary rocks are separated by four distinct flows of solid andesitic rock. The lowest of these is well seen between the first and second crossings, following up Tararu Creek; the second at and higher up the creek than the mouth of Tinker's Gully; the other two at and above the junction of Ohio Creek. Similar flows of andesitic rock can be traced in the southern part of the field, notably the cap of dark andesite found on the higher part of Una Hill, and the similar sheet of lava that caps the hill to the eastward. Both these sheets of dark andesite can be traced north across Karaka Creek and south into the Valley of Hape Creek.

The indurated and mineralised zone of the Look-out Rocks closes in an east direction the rocks of the Thames Goldfield; and, looked at as a whole, the arrangement of the rocks between the upper part of Tararu Creek and Hape Creek is a quaquaversal between north-east and south-east, the focus of which would be a little off-shore at Grahamstown.

Within the productive part of the Thames Goldfield proper, along Shellback Creek to Dixon's Hill, runs a nearly east-and-west lode bounding on the north the richer part of the field. At the southern boundary a nearly east-and-west reef runs along the north side of the valley of Hape Creek, and between these run numerous reefs having a general north-north-east to north-east direction, the Hague Smith reef, running a little to the west of north, being the most notable exception to this rule. The general dip of the lodes is to the westward at varying angles, with some exceptions also to this rule.

The field is divided into two very distinct parts by the occurrence of the Moanataiari Fault, which, with a downthrow on its western side, displaces the rocks, an amount which has not yet been definitely determined, but which is very considerable. The presence of this fault renders difficult the correlating of the reefs on each side of it, and any attempts which have been made with this object in view may be regarded as attempts merely.

Of the Collarbone Fault, first described by Mr. James Park, F.G.S., there is some doubt as to whether this affects the rocks to great depth from the surface, or whether it is continued north-east, as described by him, to Punga Flat, and thence into the Tararu Watershed. In the Upper Waiotahi Valley the Golden Age lode is indeed displaced by a fault of considerable magnitude, but there is no clear connection between this and the evidence of faulting between the Moanataiari Fault and the saddle at the head of Collarbone Gully.

The beach slide or fault, which follows the foot of the hill on the east side of Grahamstown and Shortland Flat as yet has not been shown to be a dislocation of the rocks with a downward displacement on the west side, but rather appears to be the result of the sinking of the land having a bold coast-line, and the infilling and natural reclamation of a portion of the submerged area, the line of contact forming the supposed fault.

The shoot of gold on the high levels east of the Moanataiari Fault declines at a low angle towards the south, and regarding the country west of the Moanataiari Fault, and the principal shoot of gold therein as having simply been displaced from this higher level to the eastward the outcrop of the shoot of gold on Kuranui Hill and in Hunt's creek as it is followed to the south declines at a higher angle than on the eastern side of the fault-line, and therefore we may assume that the displacement increases as the fault is followed southward.

During the season 850 full-sized specimens were collected from the rocks *in situ*, or from the tiphead of different mines in cases in which work was not being carried on in the mine.

The Under-Secretary, Mines Department, Wellington.

I have, &c.,

ALEXANDER MCKAY.

*Approximate Cost of Paper.*—Preparation (not given); printing, (2,700 copies), £9 8s. 6d.

By Authority: JOHN MACKAY, Government Printer, Wellington.—1898.

Price 6d.