

depths on the Thames Goldfield, and proceed to consider the peculiar position of the bulk of the reefs at the Thames in relation to the old volcanic centre, which it has been assumed existed about a mile from the foreshore opposite Shortland.

"The strip of country N.E. and S.W. which contains the greater number of reefs, and along which they lie in the same direction, points S.W. directly to the centre of the old volcano, the position of which was not determined by the prolongation of this line, but by the convergence of the dip lines of what remains of the eastern part of the volcanic cone, which are S.E. and N.E., focussing at the point indicated. From some undetermined cause fissures and rents for thermal waters were established along the N.E. line from the crateral pipe; and, subjected to the solvent action of the heated waters, the decomposition of the andesitic rocks was effected to great depth, fissures were filled with quartz and enriched with gold in part derived from the more superficial rocks, but, for reasons already given, in part also from deeper-seated sources. But, if the deep-seated rocks were drained to supply what was deficient in the higher, it may be asked, how is it to be expected that the reefs at low levels will even approximately yield gold as rich as was met with from the surface to the 400 ft. level? To this it may be replied that the thermal waters had not their source in and from a vast cavity filled with hot water, but was collected widely from a greater breadth of rock than the waters affected by their heat and solvent action in the mid-distance of their passage to the surface, or near and at the surface. More likely it was that, from the whole heated area of the base of the mountain, thermal waters as mere ooziings escaped from the rocks into a number of minute fissures and channels of lesser size than that by which the waters reached the surface; and thus, ere well started on the journey to the surface, the waters would be of a highly saline character, and when conditions were fit might deposit their burden in the upper, middle, or a yet lower part of the course by which they reached, or were forced along, if they on certain lines did not actually reach, the surface.

"There is therefore as little difficulty in supposing the presence of rich deposits at low levels as there is at higher, though the lower part of the lode would be required to be filled at a later date than the upper part. And here it may be asked, was not the auriferous store exhausted prior to the complete sealing-up of the lode fissures? The doctrine of the reopening of a lode and the introduction of fresh mineral matter of a valuable kind, which many facts prove, will be a sufficient answer to that objection. The question of favourable containing-walls has already been discussed.

"Having shown, then, the possibility, not to say the probability, of workable gold at deep levels on the Thames Goldfield, it but remains to indicate in what manner this may be best and most easily reached. Taking the displacement of the Moanataiari Fault as being approximately 1,000 ft., the downthrow being on the west side and the hade at an angle of 45°, it is clear that nowhere west of the fault-line is the position at which a prospecting-shaft or borehole should be placed. The best position would be at as low a level as would afford sufficient tip for the stuff mined, and at any moderate distance east of the fault-line.

"The amount of the downthrow on the west side of the fault would thus be avoided. I need not take into consideration the general eastern inclination of the rocks, for that is a factor scarcely affecting the case. With respect to boring on the foreshore, the same remarks apply and the same prospects are held out, provided boring to a very considerable depth is undertaken; but the chances against boring passing through a reef where all are standing at comparatively high angles makes this method of testing deep ground at the Thames somewhat risky.

"As an instance of the success of the deep penetration of payable gold into the volcanic rocks of Cape Colville Peninsula, it will suffice to mention the case of the mines at Karangahake. The Crown reef and the Woodstock and Talisman reefs have been traced, the first to the higher part and the last to the top of the mountain, which is 1,786 ft. above sea-level, and the works of the Crown Mine must now be considerably below the level of the sea; and in connection with the Woodstock, the lode promising to maintain a good show of gold, it was some time ago proposed to sink to levels that would prove the continuance of the lode through a vertical distance of more than 2,000 ft. Whether this work is being proceeded with I cannot say, but there is here sufficient evidence of the continuance of gold in depth, and what, if it be not a warrant, is at least an encouragement to prosecute the search at the Thames.

"It is true that Karangahake has been particularly favoured with respect to the natural exposure of its reefs in a vertical distance of 1,700 ft., but this fact has no bearing on the question of the penetration of the reefs and their gold-bearing quality, since did the gorge of the Waitawheta not exist the fact of the existence of the reefs had been the same. Information respecting barren zones at various levels in both the Martha, Shepherd's, and Crown reefs would be of great interest in connection with any proposal for deep sinking at the Thames. Such information has not been compiled with the care that is required in this case, but it could easily be obtained.

"The successful issue of deep prospecting at the Thames is a matter of such importance that it must form my only excuse for penning such a lengthy communication on the subject, and should this lead to right methods being adopted and carried to a successful result a great purpose will have been served."

At Coromandel mining matters were a little brighter last year than was the case for the year previous. A few good patches of gold have been got at two of the mines near the town, and this had the effect of renewing interest in mining-work in the locality. Taking the district, however, as a whole, the industry is decidedly quiet, and the necessity for the closing of the Kauri Freehold Gold Estates Company's mines and battery at Opitonui, and also of the Kapai-Vermont and Mariposa joint properties at Kuaotunu, is most unfortunate. In both cases it was found that the ore was not sufficiently rich to pay. At Opitonui the battery plant was of the most modern type, and included appliances for cyanide extraction and filter-presses; but the value of gold and silver won during the part of the year for which work was carried on was only £15,653 6s. 6d. from 16,121 tons of ore, or an average value of 19s. 5d. per ton.