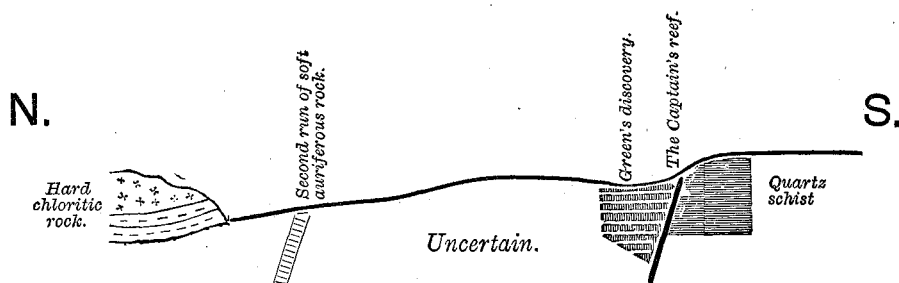


proved on examination to be silicate of magnesia. The colour of the decomposed schist when freshly broken is dark-greyish blue, but fades quickly, on exposure to the atmosphere, to bluish white, interspersed with brown ferruginous spots. According to Mr. Green's trial-washings—some executed in my presence—the gold is distributed through the stuff in hackly, spongy crystalline particles, from the size of a bean down to a state so fine and light as to be hardly recognizable by the naked eye and scarcely retainable in the tin-dish. Besides this, it occurs in the quartz-veins, especially those with a steep or vertical dip, some of which have furnished specimens of great richness, consisting, in cases, of more gold than quartz. A few which Mr. Green showed me would, if the quartz were broken out, yield small nuggets from several pennyweights up to perhaps nearly an ounce in weight. Owing to the irregular distribution of these auriferous-quartz veins, it is not possible to form any estimate as to the gold-contents of the stuff in the average, but so much can with certainty be foretold that, should the ground, on further exploration in strike and depth, prove as rich throughout as at the place about the old shafts, Mr. Green will be handsomely rewarded.

"Regarding the geological character of the deposit, and what it represents in a mining point of view, I was enabled to make the following observations: An open cutting between the old shaft shows that the soft stuff is sharply cut off on the south side by a hard quartz-vein, a few inches in thickness, dipping N. 10° W. rather unevenly, at angles varying from 60° to 70°. Beyond this quartz-vein, which is called the 'Captain's Reef,' and for the prospecting of which the old shafts have been sunk, follows thinly-laminated micaceous quartz-schist, showing nearly horizontal bedding. The quartz-vein has mostly been removed off the quartz-schist; but at one place a patch is left, showing a finely-polished surface, with deep striations normal to the line of strike—a so-called slickenside—whilst the ends of the laminations of the soft stuff are slightly turned upwards on the quartz-vein. Whether towards the north a similar wall exists has not been proved as yet, and nothing can be seen on the smooth surface for a distance of about two chains, where Mr. Green has prospected with fair results of fine gold from the gully upwards to near the top of the ridge, a second run of soft decomposed rock striking parallel to the first, but showing a lighter colour and more abundant, and larger ferruginous patches. Adjoining this farther northward follows chloritic mica-schist, which, though soft in the gully through action of the water and richly impregnated with pyrites, becomes soon hard up the ridge, exhibiting there massive rocky outcrops. The following sketch cross-section will serve for illustration of the several features mentioned:—



"From these features, considered in connection, clear evidence is afforded by the slickenside and the adjoining quartz-schist that in the line of the Captain's Reef a fault has taken place, with the result of a downthrow of the soft auriferous rock from probably a very high level; whilst in case of a second wall being found to the northward beyond the second run of soft auriferous rock—for which there is some probability—the whole of the intervening mass would constitute a huge mullock reef, such as exist on a smaller scale at Skipper's Creek and many places in Victoria. The alteration of the rock and its impregnation with gold, within the two lines of fissures, or at any rate off the faulting fissure running along the Captain's Reef, is in my opinion mainly due to the meteoric waters once circulating in this fissure, an hypothesis for which the fact speaks somewhat in favour of the richest specimens and best prospects of loose gold having been obtained by Mr. Green close along the Captain's Reef, which itself has so far not proved gold-bearing. Judging from similar occurrences in Victoria, a great part of the fine gold is doubtless derived from decomposed auriferous pyrites, an ore which may likely occur as a rich impregnation of the rock in depth below permanent water-level. There can hardly be a doubt that the fault, and with it the deposit—though whether it be of the same richly auriferous character is uncertain—extend farther westward in strike than at present opened. Several chains westward, on the western side of another gully, Mr. Green obtained, from greenish rotten rock, fair prospects of fine gold, of a similar character as occurring in the soft rock of his workings. Prospecting farther westward would, however, be connected with difficulties, as the line of strike of the fault runs across a drift-terrace into the flat, and extends through the Township of Ophir. Towards the east the chance of the extension of the deposit, at least of some width, seems unfavourable, as the ridges in that direction show in the line of strike of the fault massive outcrops of hard metamorphic rock rather close together.

"Regarding the extraction of the gold from the mullock, the softness and friability of the latter permit its quick conversion into thin mud by the action of water, and therefore the use of a puddling-machine, with a plentiful supply of clear water, and the crushing of the quartz portion remaining in the machine by means of a Chilean mill, would, in my opinion, be the most advisable process to adopt.

"Since Mr. Green's discovery several places, showing similar decomposed rock, have been tried on the ridges in different parts of the district, but apparently without success in finding payable