

there is a likelihood of the existence of two auriferous layers—that of the alluvial drift, resting on a false bottom, the top of the older drift ; that of the latter on the true rock bottom. The branch leads at the head of Spike's Gully run over one of the highest ranges, in fact the watershed of the district, and are lost, i.e. washed away beyond the range by a strong creek, which thereby became auriferous, as proved by the alluvial workings, yielding water-worn gold down its course. Considering that they have once been creek beds, enclosed between ranges, but lie at present at a higher level than the ranges for some distance beyond, here is an instance of the enormous amount of denudation the country has suffered in bygone times. Ranges are worn down to below the beds of the creeks that traversed them, and the drainage of the country is quite altered, in fact partly turned in the opposite direction.

It is evidently quite impossible to determine the exact locality of the quartz reefs, whence the gold of the old leads was derived. So much is certain from the perfectly rounded character of the quartz pebbles and boulders, that the material must have travelled a considerable distance ; and the occurrence of highly micaceous clays and occasional pebbles of metamorphic sandstone, in the heaps of drift round some of the shafts, indicates besides that it came from a district composed of metamorphic rocks, perhaps from part of the same belt of metamorphic ranges in which the Blumberg gold-field is situated ; for at Barossa, the rocks show no, or but slight, traces of metamorphic action.

From the fact that some of the gold found in the alluvial drift is less water-worn than the rest, there is, no doubt, also a probability of auriferous quartz reefs existing within the area of the gold-field itself, and one large "blow" of a quartz reef cropping through the old drift deposits has been tunnelled into and prospected by shafts, but whether gold was found, Ulrich could not ascertain. In looking at the extent and nature of the workings in the old drift hills, it seems that a number of them are but partially worked, and therefore—as is done at similar places in Victoria—tunnelling into them, and sluicing the washing stuff of the banks left standing between the old claims, might prove a profitable undertaking, the contour of the country being very favourable for the construction of reservoirs at no great expense.

*Blumberg.*—The rocks comprising this field, as far as traversed, are both of eruptive and metamorphic character. They consist of mica-schist and hard micaceous quartzose sand and flagstones, here and there traversed by massive dykes, and showing protrusions of a very coarse-grained granite, which is characterized by containing only white mica in large plates, and to which no doubt the metamorphic character of the rocks is due.

*Criterion reef.*—This reef is supposed to traverse a lowish hill, on the