

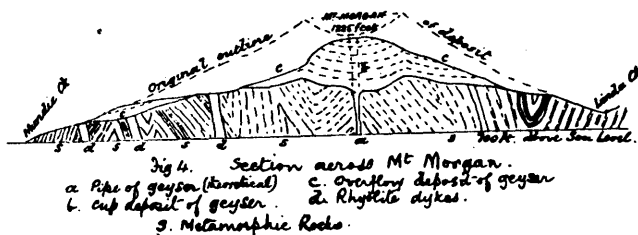
*"Although there is a general uniformity in the silurian beds, even a cursory examination discloses certain broad distinctions that are intimately related to the presence or absence of gold in these beds."

"Taking the Mall, Bendigo, which is the heart of the auriferous area, as a starting point, and radiating from it, it will be noticed that at first rocks are passed over that are much decomposed at the surface, highly coloured, yellow, green, purple, red, etc., in stripes and mottled. In places these rocks look damp, even in summer, on the exposed edges, the result of hygroscopic salts (sulphate of magnesia) being present. From these rocks the derived soil is commonly of dark red colour, clayey, and very fertile, especially adapted for the growth of the vine and of fruit trees . . . many of the beds of slate and sandstone in this area are massive, reaching to as much as 30 feet in thickness. . . . Proceeding further from the Mall, a far more extensive area is found to completely surround No. 1 area. The rocks are similar to those above described, but as a rule the beds appear to be thinner, there is an absence of the massive sandstones and slates, and the colouring of the rocks is less pronounced, there are more beds interstratified, and the beds generally appear to decompose less readily. The soil in this area is usually more clayey, and of a pale yellow colour, and less fertile."

Outside No. 2 area the rocks "consist of hard sandstones and some slaty beds, that at the outcrop are firm and sharp angled, they are seldom stained of decided colours, and they weather very slowly. As disintegration is not rapid there is little soil, and what there is mostly arenaceous, or of pale yellow or grey colour and of poor quality."

A peculiar feature of the Bendigo field is the existence of dykes of doleritic material along all the anticlinal axes, while none are found along the synclines. They are not continuous but recur at intervals.

That they have been formed at a later date than the "saddle reefs" is shown by their cutting through them. It is not proved that they have had any influence in enriching the quartz, as in some rich mines the dykes



do not occur.

The ore is treated by milling and amalgamating and concentration of the sulphurets. Concentrates are sold to pyrites works, of which there are several at Bendigo, where the gold is extracted by roasting and chlorination and by cyanide.

A noticeable feature about the Bendigo mills is the absence of rock breakers and automatic feeders. Most of the companies are Victorian and are controlled by local directors. Mine managers are not highly paid, and by keeping down expenses, \$7 stone is made to pay well, even at a depth of over 3,000 feet.

The New Chum, the Garden Gully, and the Hustlers are the lines of reef which have been most extensively mined. Now that the geological structure of the field is so well understood there is scope for scientific mining, and as the area of ground worked bears a very small proportion to the extent of country known to be auriferous it is certain that Bendigo will continue to be a rich mining field for many generations to come.

*From Mr. Dunn's Report.

WEST AUSTRALIA.

The gold fields of Coolgardie and Kalgoorlie are situated on an undulating plateau, about 1,400 feet above sea level, of palæozoic rocks, consisting of granite and hornblende schists, with intrusive diorite and acid eruptive rocks; and similar geological conditions prevail over a large area in the southern and western part of the colony. The inequalities in the contour of the surface have become filled up by sand, carried by the wind, and the absence of creeks and water courses is abundant proof of the scarcity of rain. What rain falls soaks into the sand to re-appear at lower levels, where salt lakes are formed.

Though the country is covered with gum trees and sheoak scrub, not a blade of grass grows upon it, and it speaks volumes for the pluck and endurance of prospectors and explorers that they should ever have penetrated such a desert. The railway from Perth now extends beyond Kalgoorlie, which is nearly 400 miles from the coast. Water for railway purposes is obtained from tanks constructed at intervals along the line, where bare granite ridges occur. These ridges have been utilized as catchment areas by constructing masonry channels round them, so as to lead the water running off them during rain into the tanks, which are simply excavations having the excavated material formed into an embankment round about.

During the "rush" to Coolgardie condensers were established at salt lakes along the route to supply travellers with water. Wrought iron ship-tanks of 400 gallons capacity built into masonry fire-places were used for boilers, and the steam was condensed by being led through long lines of pipe exposed to the air, and protected from the heat of the sun by bough shades.

On the gold fields fresh water is obtained in most cases by distillation from the water drawn from shafts and salt lakes, but some mines have tanks in which rain water is caught and stored. Air condensers, into which the waste steam from engines is discharged are universally used. They consist of groups of galvanized corrugated iron drains, several feet in diameter and 12 feet or 15 feet long connected in series, through which the steam passes, and, becoming condensed, is led by drain pipes into the boiler feed tank.

A marked characteristic of the Coolgardie field appears to have been the extraordinary richness of lenticular masses of quartz at their outcrop.

Many failures in mining ventures were due to the working out of these masses, while in other cases success has become assured by systematic following up of the fissure, which has opened out, and disclosed many more of these lenticular masses rich in gold. The gold occurs in rich patches, and in the Bayley's United Mine, they do not appear to follow any particular lines, but occur irregularly. In the London-derry mine, shoots of gold have been found to follow lines dipping at a high angle along the strike of the reef.

The alluvial deposits about Coolgardie, particularly in the neighbourhood of reefs, have proved very rich, and a large number of nuggets weighing from 10 ozs. to 60 ozs. have been found.

The dryblower may still be seen ekeing out an existence shovelling dirt into his "shaker." The fine gold cannot be saved by the process of dryblowing, and most of the surface would pay to sluice were sufficient water available for the purpose.