

SOME AUSTRALASIAN MINING FIELDS

Written for the MINING RECORD by W. M. Mackinnon, C. E.

THE writer having lately spent some months wandering about Australasia had the opportunity of seeing various mining fields which have peculiar features of their own. The following notes on some of the places he visited may be of interest to mining men:

VICTORIA.

For some years a system of dredging—so-called—has been carried on in certain districts of Victoria by Mr. J. A. Wallace, M.L.C., presumably with great success, as he has some eight or ten plants at work. The system would in this country be known as hydraulic elevating by steam power.

The plant consists of a boiler and engine and two centrifugal pumps, the whole being carried on a barge or scow. The scow is built in an excavation in the gravel bed which it is proposed to work. One of the pumps supplies water to a nozzle, from which a jet is thrown against the bank of gravel to break it down and carry the material into the lowest part of the pit, from which the other pump raises it into an elevated line of sluices, carried on trestling. As the excavation advances the water is allowed to rise in the pit and the scow is floated further on. The water discharged from the sluices can be impounded and used over again—a very necessary consideration where water is so scarce as in Victoria.

At Castlemaine, where the writer saw the plant of the Campbell's Creek Dredging Company in opera-

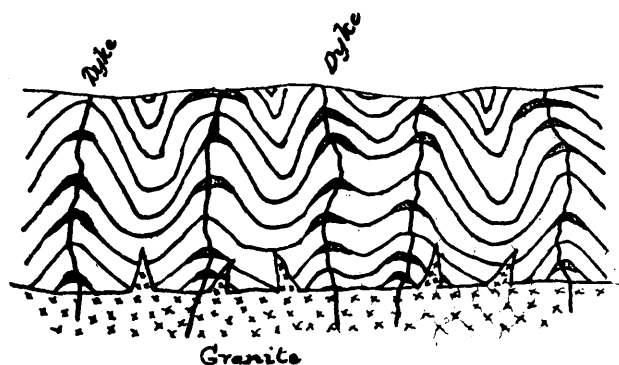


Fig. 1. Ideal Section of saddle reefs

tion, the gravel is fine and has a large amount of fine alluvium mixed with it. This appears to form an important factor in gold saving; as, the thicker the water, the more easily will it carry the gold along with it to within the influence of the pump. By using a wide sluice and spreading the discharge from the pump over it the velocity of the water can be so checked that its thickness need not prevent the deposit of the gold on the riffles.

One and a half grains of gold (6 cents) per cubic yard is reported to be sufficient to pay expenses of working. Mr. Wallace's success has brought others into the field, and a large number of leases have lately been taken up for working on his system. Where a supply of water can be obtained, and there is sufficient gold in the gravel, operations should be carried on with success.

The most interesting quartz mining field in Vic-

toria is at Bendigo, where the unique "saddle reef" formation is worked to a depth of over 3,200 feet. A most interesting report on the field has been made by Mr. E. J. Dunn, F.G.S., of the Victorian Department of Mines, and to it may be referred those in search of more information than can be given here.

The country rock is composed of slates and sandstones of Lower Silurian age. Since their deposition, the beds have become contorted to a remarkable degree and compressed into a series of synclinal and anticlinal folds. The cavities opened along the anticlines have become filled with quartz, which forms the "saddle reef." (See Fig. 1.)

The axes of the anticlines are known as "lines of reef." The Department of Mines have mapped twelve distinct lines approximately parallel, striking N 16° W, eight miles long, and extending over a width of

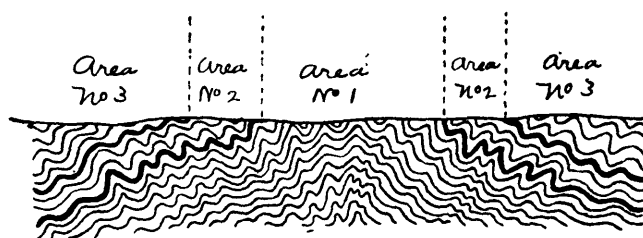


Fig. 2. Cross section

about two miles. Some of the reefs are known to extend for much greater distances, but the survey has been limited to the distance mentioned.

These "saddle reefs" often measure from 20 feet to 50 feet over the saddle, and from 20 feet to 30 feet in height, while their downward extensions, or "legs," on each side of the saddle, thin out to a wedge, and seldom exceed 100 feet in depth below the top of the anticline. They can be followed continuously along the axes of the anticlines, varying in thickness, and dipping or "pitching" in both directions along the strike. They recur in depth one below the other.

In the Lazarus Mine 24 "saddle reefs" were met with down to the 2,200-foot level, 13 of them proving payable.

Mr. Dunn states that "the richness of the quartz bodies depends primarily on the country rock," and he has mapped out three areas, shown diagrammatically in Figs. 2 and 3, which appear to support his view.

Area No. 1 has proved very productive.

Area No. 2 has proved much less so.

Area No. 3 is barren.

It will be noted that No. 1 area is composed of the

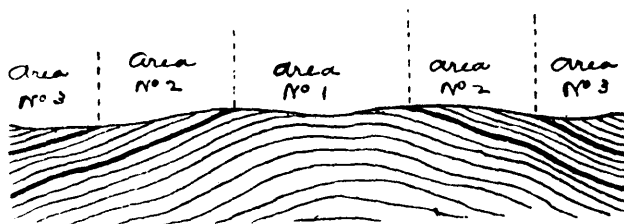


Fig. 3. Longitudinal section

older rocks, which are overlain in succession by the beds composing areas Nos. 2 and 3.