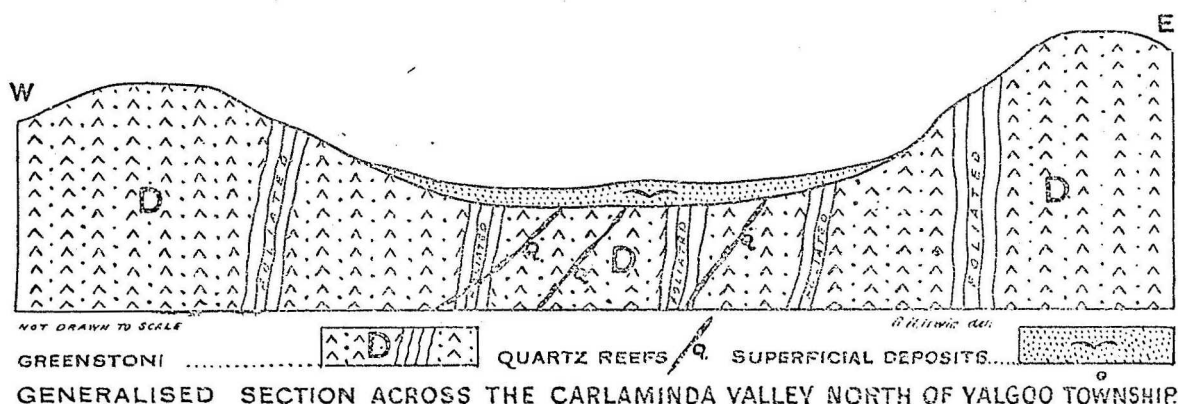


derived from such of the sections as are open to inspection, would make it appear that no deep alluvial deposits exist in the Carlaminda Valley. The generalised section herewith shows the structure of the Carlaminda Valley:—



While in Yalgoo the opportunity was taken to examine the various workings on the Emerald Reef, which yielded such sensational returns in the early days of the field. About 4,000ozs. of gold were obtained from a flat or boat-shaped reef, about 100 feet in length, and 10 feet in width and depth. Since the flat reef has been worked out a good deal of prospecting work has been done in the hope of finding the continuation thereof, but so far without any success. A fairly well-defined fissure has been proved to extend along what may be called the outcrop of the reef, which has a trend of North-East and South-West. The Emerald Reef is hemmed in, as it were, between two comparatively barren belts of foliated greenstone, separated by either a line of fault or joint, which is fairly persistent to the North-East and South-West. The deposit seems to be neither more nor less than a network of irregular veins, embraced within certain well defined limits, parallel to the general strike of the reef. The known phenomenal richness of the surface would seem to me to encourage the prosecution of more judicious prospecting than has been up to the present carried out. No attempt would seem to me so far to have been made to seriously test the possible continuity of the reef at a depth.

In addition to this, Carlaminda was visited, but as most of the properties had long been abandoned, or otherwise inaccessible, description thereof is impossible. So far as could be seen the reefs were remarkably persistent in their strike, and all had a steep underlie to the West. The quartz, judging by that lying on the various dumps, was of an exceptionally glassy nature, and, in places, contained small though appreciable quantities of the green and blue carbonates of copper, together with a little limonite.

A visit was also paid to the almost deserted township of Melville, where similar conditions prevailed.

To the South of the old Gold Mining Lease 94 three men were engaged in dryblowing, but with what success I was unable to learn. In the vicinity of this locality were several quartz and jasper veins, identical in character with those occurring at the Horseshoe, Peak Hill, the Weld Ranges, Lennonville, and elsewhere on the Murchison. The judicious prospecting of these should lead to the discovery of rich ore chutes here as elsewhere.

I was guided by Mr. Howie, of Yalgoo, to the gullies west of Melville, which appeared to have been extensively worked in the early days for alluvial deposits. These deposits, however, did not attain any thickness. The occurrence of deep leads anywhere in these gullies is not to be expected.

Paddington and Broad Arrow.—The residents of Paddington and Broad Arrow, through the medium of the Town Clerk of the two Municipalities, approached the Government for assistance in boring for either lodes or alluvial deposits, at the same time agreeing to pay one-half of the expense. In accordance with an official request the local authorities delineated upon a plan those places which, in their eyes, seemed to merit especial attention, and for which aid was required, it being held that the discovery of fresh deposits would tend to establish confidence in the future of the district, and encourage the systematic exploration of the deeper ground.

Having received instructions to visit Paddington and Broad Arrow in connection with the application, the Assistant Geologist, Mr. Gibson, was employed to collect the necessary geological data bearing on the question.

The mining centres of Broad Arrow and Paddington are, in their geological features, identical with those of Bardoc, with which the various formations are coterminous. The gold produced from Broad Arrow and Paddington has been derived from two distinct sources, viz., the superficial deposits and the lode formations or quartz reefs: these having yielded, up to the end of 1901, 57,199·13ozs. of gold by the crushing of 68,815·13 tons of ore, being at the rate of ·83ozs. per ton. At the time the district was visited very little mining was going on, and most of the properties were abandoned, or otherwise inaccessible. Abandonment of a mining district, however, does not necessarily mean that the locality is worked out; and, further, strangulation of lodes or reefs is not a proof of limited extent in depth, but a necessary consequence of their mode of origin. The auriferous belt of Paddington and Broad Arrow is confined to a comparatively narrow strip of country a little over a mile in width, and is practically coincident with the area over which the country rock has suffered the greatest amount of movement. The reefs and formations are all practically parallel, and trend generally North-West and South-East. These, as far as can be seen on the surface, have a considerable longitudinal extent, being, however, cleavage veins they are liable to pinch out at any time, but will make again. Most of the numerous workings being

inaccessible, I was unable, by ocular demonstration, to form any idea as to their behaviour or nature underground. The element of chance in the discovery of reefs is unusually prominent in such capricious deposits as those along cleavage or shear planes.

The superficial deposits of Broad Arrow and Paddington cover a great extent of ground, and consist for the most part of the rocks decomposed *in situ*.

The proposal made to the government by the Municipalities embraced four areas in which it was held that alluvial deposits were likely to occur, and which should be prospected, and two which would seem to afford the best chances of success in respect to boring for reefs.

The Northernmost of the alluvial areas lay in a broad valley, flanked on either side by low hills of amphibolite, and was covered with a small thickness of superficial deposits. Several shafts have been put down on the flanks of the valley and expose nothing but amphibolite; one or two shafts have been sunk in the depression of the valley, and expose little else than rock decomposed *in situ*, overlaid by a foot or two of loam. From all the evidence available it does not appear at all likely that the cover can be more than 20 or 30 feet thick.

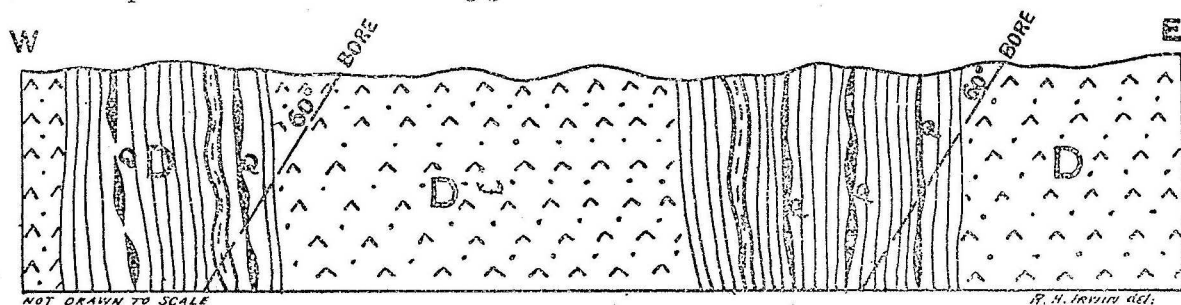
The next area lay in a low broad valley between the Explosives Reserve (4101) and the Railway Line; this had been exhaustively tested by several shafts, which were abandoned and inaccessible. From what could be seen in the dumps the sinking had been through the ubiquitous superficial deposits and the decomposed slaty rocks which, in many cases, weather in the direction of kaolin. In the dumps of one or two shafts were large boulders of a quartzose cement, so characteristic of certain of the claims near the head of the North Lead, Kanowna.

A little further to the Westward of this area is the head of the wide valley embracing the third tract of country pointed out by the Municipalities. This valley trends Southwards, and from its physical conformation would seem hardly likely to contain any material thickness of alluvium. The floor of the valley is underlaid by amphibolite and its decomposition products. Several shafts have been sunk, and they show that the bed of the valley is concealed by merely a foot or two of superficial deposits. There would seem to be little probability of any deep alluvial ground being found to the north of the Cemetery.

Another suggested possible alluvial area lay to the West of Paddington; the surface of the ground is covered with a thin mantle of superficial deposits. Near the northern end of the area one or two shafts of shallow depth show that the cover nowhere exceeds a few feet. It would, therefore, be hardly probable to expect any development of deep alluvial ground in this area.

A considerable portion of what may be called the Smithfield Area has been dryblown, but with what result there appears to be no record. The slaty country rock (and its decomposition products) rises practically to the surface, and is concealed by a few inches only of superficial *débris*. Several shafts have been sunk in the area, but they all bore signs of having been for a long time abandoned. Judging by the material lying in the various dumps, it would seem that only small quartz leaders had been worked. The prospect of any deep alluvial ground over this area is remote.

The most northerly area selected by the Municipalities lies between the township of Windanya and Paddington, and is about two miles long and half a mile broad. The ground is traversed, however, by several persistent lines of reef, all of which are roughly parallel to one another. The mode of occurrence of these deposits is shown in the following generalised section:—



GREENSTONE QUARTZ REEFS
GENERALISED SECTION SHEWING THE SUGGESTED BORE SITES N^o BROAD ARROW

From a careful inspection of the district, and such evidence as was available, it appeared that (a.) the chances of discovering payable deep alluvial deposits are remote, and the search for such would be in the nature of "blind stabbing"; (b.) the greatest service which could be rendered to the district would be in the direction of testing the nature, character, and continuity of the lodes at a depth. It was suggested that the ground shown in the section above be tested by two bore holes located in such a position as would intersect the deposits at such a depth as would be attained in 500 feet of boring in each hole. To intersect any of the deposits in the required depth of boring, the hole would have to be inclined at an angle of about 60° from the horizontal.

Queen Margaret Gold Mining Co., Ltd., Bulong.—The Queen Margaret Gold Mining Company of Bulong has made application to the Government for assistance towards prospecting the as yet untested ground to the East of the present workings, at a depth of 600 feet from the surface.

It was proposed to do this by penetrating the country from the face of the eastern crosscut for a distance of 1,000 feet, in the hope that other lodes parallel to those already worked on the property of the Company may be found.