

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.

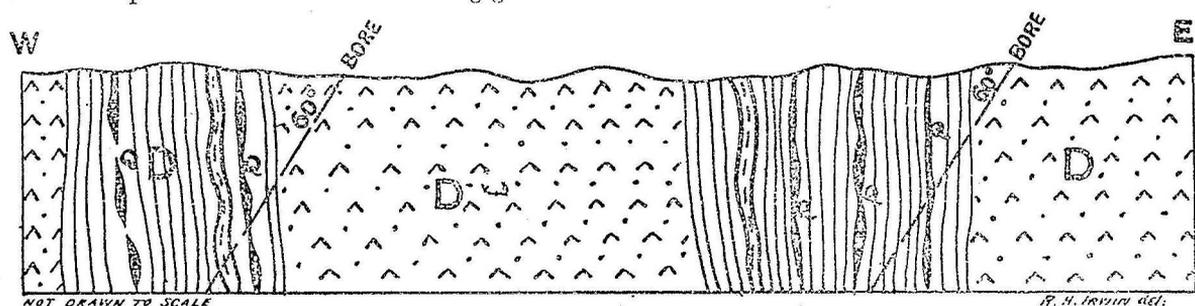
The next area lay in a low broad valley between the Explosives Reserve (4101) and the Railway Line; this had been exhaustively tested by several shafts, which were abandoned and inaccessible. From what could be seen in the dumps the sinking had been through the ubiquitous superficial deposits and the 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 sunken 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:—



**GENERALISED SECTION SHEWING THE SUGGESTED BORE SITES N<sup>o</sup> 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.

In accordance with instructions, a personal inspection of the property of the Queen Margaret Company was made. Owing to the nature of the application it was found unnecessary to devote much time to a detailed examination of the existing workings, attention being principally directed to that portion of the country which would be explored by the present operations, with the view of ascertaining whether there were any reasonable geological grounds for believing that the ground might be likely to develop further reefs.

The geological constitution of the neighbourhood consists of graphitic and talcose schists, breccias and quartzites, associated with igneous rocks of somewhat obscure origin (diabase?). That a considerable amount of *bonâ fide* work has been done upon the Company's property may be seen by an inspection of the mine plans.

There are two distinct lodes—the Queen Margaret and the Eastern Lode—upon the property, both of which have been worked. These have been opened up by means of two shafts for a length along the strike of about 1,400 feet as shown by the plan. The deepest workings have been carried down to a vertical depth of about 700 feet from the surface. From the 600 feet level a crosscut has been driven to the East for a distance of 1,320 feet from the shaft. The crosscut has been carried through a considerable thickness of graphitic and talcose slates and schists, dipping at an angle of  $50^{\circ}$  to the West, intersected by diabase and certain other igneous rocks of doubtful origin. These rocks are traversed by certain parallel fissures, two of which have proved to be ore channels containing gold in such quantities as to render them worth working.

Some considerable distance to the East of the Queen Margaret, a parallel lode—the Great Oversight—has been worked along its outcrop, and has proved to be extremely rich in places. In its mode of occurrence the ore deposit of the Great Oversight is practically identical with that of the Queen Margaret.

The mode of formation of fractures which prove to be ore channels is such as to produce more or less parallel fissures of variable extent, and that such a condition obtains in the ground under consideration is evidenced by the section exposed in the crosscut and the workings to the East.

The surface of the ground between the two lodes, the Queen Margaret and the Great Oversight, contains quantities of quartz fragments of such a nature as indicate that they have resulted from the disintegration of rock *in situ*, in which case it would not be at all unreasonable to expect that the strata beneath would be traversed by similar quartz veins, some of which might possibly be of workable dimensions.

In view of all the evidence available, there are no grounds for believing that the unexplored country between the face of the Eastern crosscut and the Great Oversight cannot be traversed by further ore channels parallel to those already opened up, but whether any such would prove to be payable could only be determined by practical work.

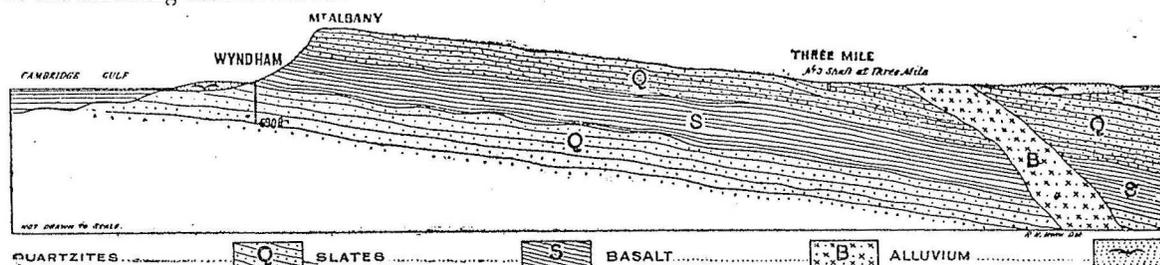
On the grounds that the discovery of lodes in the country to the East of the face of the long crosscut would tend to encourage prospecting at greater depths than those at present obtaining in the more immediate vicinity, I am of opinion that the request of the Queen Margaret Gold Mining Company for a subsidy might very reasonably be granted. Such subsidy should be given on the basis of pound for pound, but contingent upon satisfactory answers being given to queries put to the local Inspector of Mines as to the method in which the mine has hitherto been worked. The Government would be involved in a liability of about £500 to enable the amount of boring, viz., 1,000 feet, to be carried out. In order to enable the greatest amount of virgin ground to be tested in the 1,000 feet of boring, it will be necessary to incline the hole at an angle of from  $20^{\circ}$  to  $30^{\circ}$  from the horizon.

To minimise the possibility of undue advantage being conferred upon the lessees at the expense of the general public, I am of opinion that a reserve of some extent should be created to cover the site of the bore.

#### WATER SUPPLY.

During the year the advice of the Department was sought in the matter of the geological conditions affecting the water supply of different portions of the State.

Wyndham.—In considering the question of the water supply of Wyndham, from the geological standpoint, it is merely necessary to ascertain whether the structure of the country renders it probable that an abundant supply of potable water will be found. The geology of the Wyndham district is simple, as the following section shows:—



GENERALISED SECTION FROM WYNDHAM TO THREE MILE.

A very large portion of the district consists of a plain of a considerable extent covered with deposits of estuarine origin. The staple formation, however, is made up of a great series of quartzites, sandstones, fine conglomerates, shales, and igneous rocks; these sedimentary beds are disposed in a series of broad anticlinal folds.