

worked by a party of three, who raise the stone, and have it treated at the Government battery, where it generally yields two ounces to the ton. The "North Star" is a very similar class of reef to the No. 1, but the stone is not so rich nor the workings so extensive, the main shaft being 200 feet in depth with a level North and South at 160 feet. The reef varies from two feet to four feet in width.

The "Lady Jean" is situated upon a line upon the Eastern side of the hills, and has been opened up by an underlay shaft to a depth of 85 feet, with a level at the bottom, and at the 45 feet. The auriferous chutes are short, and the reef itself varies from a few inches to 3 feet, but it is lost entirely at the Northern end of the workings.

The "Mararoa" is a large quartz body upon which a considerable quantity of work has been done. Two shafts have been sunk about 5 chains apart upon the lode, which dips at an angle of 45° to a depth of 120 feet; these are now being connected by a level, which is nearly through. In the South shaft the quartz reef is of great size, sometimes being as much as 20 feet in width; this is not very rich, but at the Northern shaft a very rich chute was worked quite up to the surface.

To the Southward of the Norseman group, upon some rough hills which break the North and South gold belt, are a group of mines in which the lodes are entirely different in character, strike, and dip. The first of these is the Mt. Benson, from which a considerable quantity of stone has been crushed, yielding nearly 1oz. This stone came mostly from an adit level, but now that this has been worked out, shafts are being sunk to test a series of cross and irregular reefs at a depth, but as yet sufficient progress has not been made to determine their courses.

The "Cumberland," another of this group, has been opened up to a vertical depth of 227 feet, and four levels totalling more than 1,000 feet in length. The reef is, as a rule, small, varying from a few inches to 2 feet in width, whilst only a limited quantity was worth stoping. At the 143 feet level a new development took place in the form of a series of cross reefs, of which there are five, all of which contain stone that crushes about 1oz. These cross reefs are 3 to 4 feet in width and short in length, but will probably increase in length with depth. At the 227 feet level, seven of these cross reefs were cut, thus proving that two more have made their appearance between the two levels.

A few miles South of this group is the "Lady Mary," upon which a considerable quantity of work has been done, and a fine plant erected. The reef now being worked is of the Norseman type in the upper portion, where it dips at an angle of 45° , but lower down it pitches away at an angle of 70° .

The underlay shaft is 360 feet in depth, with a level at the bottom 170 feet in length, in which there is a fine body of lode matter, the chute being 120 feet long. The stone at this level is mineralised, but also shows gold freely in places.

The "Alikazander," although close to the "Mary," is entirely different from anything else upon this field, it being a large ferruginous formation of low grade. A shaft has been sunk to a depth of 120 feet upon it, and at the bottom there is a level and crosscut, which latter proves the lode to be 30 feet in width. By battery treatment this stone yields from 12 to 15 dwts., but the sands and slimes contain a quantity of fine gold. A great deal of work has been done on this property in the way of tunnels, of which there are about three, each being of considerable length, and in which the large lode was crosscut.

It is rather distressing to see so many apparently payable properties upon which so much money has been expended, either abandoned or being worked by one or two working miners. However, when the railway system connects with Norseman, this field is bound to have a revival.

THE PHILLIPS RIVER GOLDFIELD.—In the year 1900, Mr. Blatchford, the then Assistant Geologist, reported upon this field in its earlier stages, and the following Report by Mr. H. P. Woodward, furnished during the year, serves to supplement the information already obtained:—

This, the most recently discovered goldfield in the State of Western Australia, is situated upon the Southern coast, about 150 miles to the Eastward of Albany, and immediately adjoins the Dundas Goldfield upon the West.

Its port is Mary Ann Harbour (the township being called Hopetoun) which is served by a weekly steamship service from Albany, whilst there is a telegraph station both here and at Ravensthorpe, the official centre 30 miles to the Northward.

The coast line in the vicinity of Hopetoun is low and sandy, along which numerous granite reefs are encountered even for a considerable distance out to sea.

Behind the town a semicircular sandy plain extends, measuring about 20 miles East and West, and 10 North, behind which the country gradually rises towards a low range which runs in a crescent shape from East Mt. Barren upon the West in a North-East direction, then East and then South-East to the coast. The whole of this basin is drained by the Steere River, which discharges itself into Culham Inlet, near the base of East Mt. Barren; but since this river has not run for a considerable time, the pools are quite salt, and the Inlet (large lake behind the coastal sand hills) contains only a few inches of water.

After crossing this range, the country is hilly and broken to the foot of the Ravensthorpe Range, which is a fairly defined range of hills that run from North to East, and then turn South-East, attaining its greatest elevation at Mt. Desmond, which is situated to the South of the gap, at which point the range takes its Southward turn.

This basin, which lies between the first-mentioned low range and the Ravensthorpe, is drained by the Phillips River, which discharges itself into the sea to the Westward of East Mt. Barren.

In the coastal section the soil is for the most part poor and sandy, although in some low swampy patches there is good black soil and limestone. Nothing but the ordinary sand plain vegetation and marlock (mallee) grow upon this belt.

In the next section, which embraces the gradual slope towards the low range and the range itself, the soil improves considerably, there being considerable areas that are covered with light loams and clays, but the large proportion consists of ironstone and rocky outcrop. This belt is mostly covered with marlock, with here and there small patches of yate.

In the Phillips basin a very marked improvement in the nature of the soil takes place, there being very considerable tracts of rich red clay and loam which often attain a thickness of nine or ten feet. This country is, as a rule, thickly timbered with marlock and salmon gum, but the latter rarely attains to considerable size. When, however, clear patches are met with, the ground is covered with fine crops of grass. This soil would make excellent agricultural land owing to the fact that it is a good strong soil and contains a certain quantity of gypsum, which causes it, when dry, to crumble, thus allowing the air to influence an oxidising action upon the minerals contained in it.

There are, of course, also poorer patches and belts in this basin, particularly near the base of the range where the granitic rocks outcrop; these belts are clearly marked by the class of vegetation, which is always of a stunted and scrubby nature.

Here, like all along the Southern coast, we find that a great disturbance has taken place in long bygone geological ages, by which the main strike of the metalliferous series has been thrown into a more or less Easterly and Westerly direction by a great granite intrusion, but unlike most of this coast, the mineral bearing series approach the coast more nearly, the granite only appearing as reefs upon the beach and out at sea, although they probably extend for about ten miles inland beneath the recent coastal sandstones and limestones to the Northward of Hopetoun.

A few miles to the Westward of Hopetoun a bold rock mass rises abruptly called "East Mount Barren"; this is the Eastern end of a range which runs along the coast for a distance of about 40 miles, the rocks of which consist of hard highly crystallised rocks and quartzes, being destitute of metalliferous mineral veins.

From the Eastern end of this range is a low semi-circular range of schistose rocks with large pink quartz reefs traversed by numerous porphyritic dykes having a well defined North-West and South-East course, whilst diorite dykes are of less frequent occurrence. These rocks, to judge from their weathered surface, are hornblende and mica-schists with veins of dolomitic limestone, the latter having probably furnished the magnesian limestone with which the fragments of the rocks are encrusted. This series, so far, has not proved to be metalliferous. In the Phillips River basin a marked change in the nature of the country is at once apparent, not so much from the rocks themselves, since they rarely outcrop, but from the soils which result from their decomposition. Upon sinking, these rocks prove to be hornblendic and mica-schists similar to those of the Northern goldfields with granite and feldspathic dykes, the latter of which are often garnetiferous, whilst diorite dykes are abundant, and are of considerable extent and size, having apparently exercised a direct influence upon the formation of the mineral veins which occur in this series.

The Ravensthorpe Range itself consists more of the granitic series, being capped by ferruginous sandstones, and is untraversed by diorite dykes or mineral veins; the only dislocation being at the gap, where it takes its turn South-East at the apex of the diorite intrusion. Of the dykes, the granite (locally called "mica bars") are the most recent, for they often cut through the lodes, whilst probably the diorite are next, since the felstones, with their associated copper lodes, seem to have been dislocated at the same time as the range.

The lodes may be divided into two classes—those in which copper is of the greater intrinsic value, and those in which gold is. The first of these have been opened upon at three different parts of the field, viz., Ravensthorpe, Mt. Desmond, and Harbour View.

The Ravensthorpe belt of copper lodes strikes in an East-North-East and West-South-Westerly direction from the North-West corner of the township, and extends for a distance of 5 miles; it consists of two groups, the first or central lies to the North of the township, and extends continuously for a distance of 2 miles, after which there is a gap of $1\frac{1}{2}$ miles, and then the Eastern group of leases for a distance of $1\frac{1}{2}$ miles.

Three miles in a West-South-Westerly direction from the Westernmost lease of the central group are three large mineral leases, which may be called the Western group, upon which the earliest discoveries of mineral upon this field were made; these are possibly upon the same belt, but no definite statement can be made since lines of rock outcrop cannot be traced, owing to the thickness of the superficial deposits; prospecting is therefore rendered difficult, and the presence of reefs and lodes only determined by small fragments upon the surface. This, it may be remarked, is the general characteristic in the Ravensthorpe District of both gold and copper lodes, whilst further it is not at all exceptional to discover, after finding fragments of lode matter upon the surface, that some 4 to 6 feet of clay, destitute of stone, has to be passed through before the cap of the lode is encountered.

Although this belt has a general direction East-North-East and West-South-West, the individual lodes, as a rule, strike almost East and West, or a few degrees North of East and South of West with a general Northerly dip; the exception being in some few lodes which dip to the Southward.

The Central Group.—This group consists of eleven leases, the earliest discovered being the Mt. Cattlin, M.L. 15, upon which a large lode has been opened upon for a length of 6 chains, varying from 5 feet to 15 feet in width, and sunk upon by an underlay shaft to a depth of 72 feet, in which the lode has been cross-cut at the 30 feet level where it is 15 feet wide, and the 54 feet where it is 17 feet wide, below which the sulphides make their appearance; but water has not yet been struck. Five tons of ore have been shipped from this mine, which gave a return of 19 per cent. of copper and $\frac{1}{2}$ oz. gold per ton.

On the Marian Martin, M.L. 16, lodes have been opened at three points across the lease, but although these shafts are upon the general line of strike, there is nothing to prove that they are upon the one lode; in fact, everything points to the existence of two lodes, one striking East and West, and the other East-North-East and West-South-West. The Northern lode, which is 3 feet in width, has been opened upon to a depth of 15 feet near the Eastern boundary, and the ore taken out for a distance of 20 feet East, whilst in some trenches a little to the South-East a lode is exposed which cannot be the same, unless a throw of some 15 feet or 20 feet has taken place, and the course of the lode changed. Near the centre of this lease this last-mentioned lode has been opened upon by an underlay shaft for a depth of 35 feet, in which the sulphides were cut at 20 feet from the surface.

From the Westward of this shaft the ore has been removed to a depth of 10 feet, and for a distance of 30 feet, in which the lode was 4 feet 6 inches in width. Near the Eastern boundary another shaft has been sunk to a depth of 40 feet, in which the sulphides were cut at 30 feet from the surface. From this lease between 60 and 70 tons of ore have been shipped, which averaged 20 per cent. of copper, whilst a large quantity has been bagged for shipment.

The Zelandia, M.L. 46, has been opened by an underlay shaft at the North-East corner to a depth of 62 feet, down which a nice vein of ore from 2 feet to 3 feet in width was followed. At the 40 feet a level was driven for a considerable distance to the Eastward, in which the lode was thrown by a number of cross faults to the Northward, whilst in the Western level the reef behaves in a similar manner. A new shaft is now being sunk upon the lode to the Westward, from which some nice ore is being raised. A good many tons of ore have been shipped from this lease, and there are still a number of bags ready filled, which should go from 20 to 25 per cent.

The Grimsby, M.L. 110, has two lodes, 18 feet apart at the surface, which dip towards each other, and should junction at a depth of about 100 feet if the present dip continues. These lodes have been sunk upon to a depth of 40 feet, and prove to carry a good vein of ore from 6 to 12 inches in width, sulphides being met with at the bottom. A parcel has already been shipped, and more is now being bagged, which should yield from 10 to 15 per cent. of copper.

The lodes upon the other members of the group are many of them promising, but as yet very little development has taken place.

The Eastern Group.—The Eastern Group, which consists of the Kingston, Ravensthorpe, Mary, etc., have not been sufficiently developed yet to say much about, but upon the Mary, M.L. 7, the developments are promising.

The Western Group.—The Western group, consisting of the "Surprise" and "Jim's Wonder" are practically abandoned, but there is no doubt that these and the intermediate land between the various groups will be thoroughly prospected so soon as the facilities for the treatment of ore improve, since, at the present time the cost of £7 per ton (exclusive of cost of raising, bagging, etc.), practically handicaps working miners, and renders it impossible for them to ship anything but high grade ore.

The Mt. Desmond (Elverdton) group is situated near the hill of that name 6 miles South-West of Ravensthorpe township. The principal mine here is the "Elverston, M.L. 95," across which the lode runs in a North and South direction. It has been opened upon for a length of 200 feet by three shafts, the Northern of which is 25 feet, the middle 81ft., and South 45ft., whilst most of the lode has been stoped from the 25 feet and 45 feet levels to the surface. The lode varies from 2 feet to 8 feet 6 inches in width, but averages, as a whole, 6 feet in width, from which 400 tons, averaging 28 per cent. of copper and 6dwts. of gold, have been shipped, whilst about 50 tons more are bagged ready for shipment. There are also about 1,000 tons of seconds which are estimated at 10 per cent. of copper at grass. The ore exported, so far, after carriage and all charges were deducted, has given a return of £20 per ton, which must have yielded a very handsome profit over working costs. No water has yet been sunk, and the sulphides were not cut until the main shaft was down 70 feet from the surface. Portions of the lode carry very rich veins and bunches, from which all the ore shipped was won, since this needs no dressing but simply breaking small and bagging.

The "Elverston South" is the same lode, but here it needs more dressing; it consists of nodules of green carbonate in a kaolinised matrix which is washed away in an adjoining creek, after which the clean ore is bagged.

The lodes which lie to the Eastward of this line strike more to the East of North; some of them are large kaolin veins with bunches of green carbonates, whilst others are compact veins of ore from 6 to 12 inches, which is rich enough to ship without dressing.

The Harbour View Group.—The Harbour View group is situated about 6 miles to the South-East of the last-mentioned, and the mine which gives its name to the locality was the first to be discovered in this locality. The lode here, as at Mt. Desmond, strikes nearly North and South, with a Westerly underlay, it averages 4 feet in width, and has been opened upon an underlay shaft to a depth of 80 feet, from which levels have been driven North at the 35 feet for a distance of 20 feet, and at the 80 feet for a distance of 100 feet., in which latter there is a break in the lode about 50 feet North of the shaft. This, however, is only local, since the cap of a good strong lode body can be traced over the entire length of the lease. The ore body is solid and clean, 70 tons of which have been shipped, which yielded 23 per cent. of copper and 1½ ounces of gold per ton. A large quantity more is on its way to the smelters, whilst a large and continuous output can now be kept up since no stoping has yet been done.

The "Red, White, and Blue," M.L. 60, lies to the Eastward of the last mentioned, and in it the lode strikes in an East and West direction, with a dip to the South, which has been opened upon for a distance of 11 chains. In the vertical shaft, which has been sunk to a depth of 110 feet, the lode has passed through at a point where it measured 12 feet in width; but as a general rule when it is exposed it is smaller, and will probably average from 5 to 6 feet over its entire length. In some parts of this lode

the cap consists almost entirely of iron, with only a small percentage of copper, but, since as a rule at these points it is extra rich in gold, it will probably all pay to smelt when greater facilities offer. These latter remarks also apply to the Harbour View, which is by many persons supposed to be the continuation of the same lode, thrown by the great quartz intrusion to the Southward, which apparently cuts off the mineral bearing country.

Eleven tons of ore were sent from this mine, which yielded 29 per cent. of copper and 7 dwts. of gold; whilst a small supply, shipped when more iron was present, yielded 10 per cent. copper and $1\frac{1}{2}$ ozs. gold. There are eight other leases in this locality, which are still in the prospecting stage.

The track of country between the Harbour View and Mt. Desmond should be prospected, since there is every prospect that other rich lodes will be found in this belt. The copper prospects of this field are distinctly encouraging, for not only are the lodes large and rich, but they all contain an appreciable quantity of gold, which latter metal is in greater abundance as a rule in those portions of the lode in which there is less copper, and since the whole lode masses contain a sufficiently high percentage of copper to warrant it all being smelted, the whole gold contents will also be secured, which will add considerably to the value of the resulting matter.

About two chains North of the 70 feet shaft is one which has been sunk to a depth of 30 feet, in which the reef is 1 foot 6 inches in width. A little to the Eastward of the Northern shaft a small parallel reef 2 feet in width has been opened upon to a depth of 40 feet, the stone from which assayed from $1\frac{1}{2}$ to 2ozs. The strike of this lode is 25° East of North, with a Westerly dip; its outcrop has been opened at several points for a distance of about half a mile over the adjoining leases.

"The Grafter," G.L. 17, is the next property to the Westward, which has attracted considerable attention owing to the richness of the stone, but up to the present the main lode has not been opened upon, the rich stone being raised from two small spur veins, one of which has been sunk upon to a depth of 70 feet, the stone from which is said to average 3 ozs. What appears to be a main lode lies a little of the Eastward of these two shafts. It has a large ferruginous outcrop, and is said to prospect well. This is now being crosscut for from the bottom of the North shaft.

The next main line is the "Floater," M.L. 24, the outcrop of which has been traced for a distance of one mile for certain, whilst many prospectors claim for it double this distance, and they may be right. It has been opened upon to a depth of 200 feet by a large vertical shaft, which has been sunk entirely in the body of the lode, from which some 500 or 600 tons of stone, which assays rather over 2ozs., are at grass. A battery is in the course of erection upon this lease, but strange to say, although located in a valley, no water has yet been cut in the shaft.

At the North end of this line is the "Lady Bertram," which is clearly the same line of lode, the strike of which is 20° East of North, and dips to the North-West. The reef is three feet wide, and has been sunk upon to a depth of 80 feet, the sulphides being met with at the 50-foot level, whilst the stone assays from 2oz. to 3oz.

The North shaft has been sunk to a depth of 53 feet vertical, but only cut the reef at 50 feet from the surface. At the South end of this line is the "Albavale," M.L. 27, where a large lode has been opened upon for a length of four chains by four shafts—two to a depth of 60 feet and two to 30 feet. From the two 60-foot shafts levels have been driven North and South, and a large quantity of stone raised, in which the gold is very fine. Fifty tons of this are now being bagged and shipped for treatment in Victoria. The North shaft, which is 30 feet, did not cut the reef, on account of a throw, but it was picked up by a crosscut from the bottom of the Eastward.

The "James Henry," G.L. 26, line strikes North-East, dips North-West, and can be traced for a distance of about one mile, and has been sunk upon in this lease to a depth of 80 feet, with a level drive 50 feet North, in which the reef averages 2 feet in width, the stone from which is said to assay extremely well.

The oxidised portion of the lode does not extend far from the surface, below which sulphides occur in abundance to the water level at the bottom of the shaft.

On the "Cousins Glory" and the "Phillips River Proprietary" there are several shafts upon the same lode, which vary in depth from 20 to 60 feet, or water level; whilst upon the last-named, which is admirably situated, a battery is being erected.

The "Lady Annabel" line runs parallel, and only a little to the Westward of the last-named. It is very highly mineralised below the water level, but above this it consists often of a solid mass of oxide of iron. A shaft has been sunk upon Lease 21 to a depth of 50 feet, the water being struck at a depth of 30 feet from the surface, at which level a drive is being driven, which is now in 40 feet South-West. This stone is said to assay very well.

Although not continuously traced at the surface, a reef of very similar character has been opened up upon the "Annabel South," the "I.X.L.," and the "Monarch," covering a distance of about one mile, and which is very probably the same lode.

The next line is the last and most Western, which is called the "Diamond Jubilee," after Lease 16, upon which gold was first discovered. Upon this lease an underlay shaft has been sunk to a depth of 100 feet, in which the lode varies from a few inches to 4 feet in width, and is said to be very rich, especially where the reef makes in size. Whether the lode in the "Alpha" is a continuation of the same line or not it is impossible to say, but it is probable, and, if so, this lode will prove to be of the usual length of a mile, viz., from the "Jubilee South" to the "Alpha."

There are a few more leases to the Westward, but up to the present no well-defined lode has been discovered upon them. Between the various main lines mentioned above there are a series of small and large lodes, but these have not up to the present been sufficiently prospected to determine whether or not they are main fissures, and have any extent. Upon this field there is nothing very sensational, visible

gold being the exception, since it is as a rule fairly disseminated through the stone which, in the oxidised zone, generally carries a considerable quantity of oxide of iron and sometimes copper stains, whilst below this, which is never at a great distance from the surface, sulphides are principally met with, which point must not be lost sight of in the selection of plant for ore treatment.

Another feature of the field is that large reefs are the exception, and therefore it is necessary that they should be rather above the average in rich ores to make profitable mines.

Very little work has been done considering the length of time that these leases have been held, but this is only what is to be expected considering that the work of development has been left entirely to working miners or small syndicates without capital, whilst the cost of shipping and treating ore from the field, is too great to yield a return from even two-ounce stone, therefore the owners have had to exercise a waiting policy until a battery was erected upon the field. This may now be said to be almost an accomplished fact since two are in the course of erection, whilst foundations for the third is being prepared, and therefore in a short time it is expected that the true value of the various leases will be determined, when it is to be hoped that many of the promising ones will attract the attention of persons or companies that are in a position to work them properly for the benefit of themselves and the State.

This naturally brings us to the water question, which is going to be a difficult problem, since the rainfall is small and light, spread over many months, so that the creeks rarely run except after thunderstorms (in fact there is no appearance of this having taken place for many years); the ground is bad for holding, and the water level and underground supply very variable and very uncertain, whilst the water is generally salt. Up to the present neither of the companies that are erecting batteries have a drop of water, whilst the third—where the foundations are being prepared—has a water supply, but no battery. Timber will also be a serious item since the local marlock, etc., although good enough for prospecting, will be of little use in opening up mines, since both it and the salmon gum do not stand well in the ground, although making excellent firewood.

Carting too is a serious item, added to which the cost of shipping to the miserable little port where there are no facilities for landing timber or machinery, will render the preliminary working of this field extremely expensive. Taken as a whole the field is a very promising one, since there are a number of well defined fair and large-sized gold lodes which are of apparently paying value, whilst the copper lodes have been proved to be decidedly so, for in several cases, in spite of the large costs in connection with the treatment of the ore, they have not only paid all expense, but repaid the purchase money and something over.

What these mines need is a smelter on the ground, so that the ores could be matted up to a high percentage; such a smelter would be able to utilise some of the rich ironstone lode caps, and all the concentrates from the batteries, and should be an exceedingly profitable undertaking, since there is abundance of ore in sight to keep a 30-ton furnace going.

NORSEMAN GOLD MINES, LIMITED.—As alluded to in my report of last year,* financial assistance was rendered to this company, to enable them to explore the deep levels by sinking the Viking shaft from 450 feet to 700 feet. The following table gives the particulars of assays made in the Departmental Laboratory as the work proceeded:—

Lab. No.	Depth in feet.	Assays.
3020	460	Gold, 20 grs. per ton; silver, 2 dwts. 11 grs. per ton.
3021	470	Gold, trace; silver, 2dwts. 11grs per ton.
3022	480	Gold, trace; silver, <i>nil</i> .
3023	490	Gold, trace; silver, 2dwts. 11grs. per ton.
3024	500	Gold, 1oz. 16dwts. 18grs. per ton; silver, 3ozs. 19dwts. 5grs. per ton.
3025	510	Gold, 2dwts. 11grs. per ton; silver, 15dwts. 12grs. per ton.
3026	520	Gold, 20grs. per ton; silver, 1oz. 3dwts. 16grs. per ton.
3268	530	Gold, 20grs. per ton; silver, 20grs. per ton.
3269	540	Gold, 20grs. per ton; silver, trace.
3270	550	Gold, 3dwts. 6grs. per ton; silver, 4dwts. 22grs. per ton.
3271	560	Gold, trace; silver, <i>nil</i> .
3272	574	Gold, 20grs. per ton; silver, 20grs. per ton.

ALLUVIAL DEPOSITS, SIBERIA.—In February, 1901, the Assistant Geologist, Mr. W. D. Campbell, in accordance with instructions, submitted the following report upon the occurrence of deep alluvial ground at Waverley (Siberia):—

For several years sinking for deep leads has been tried to a limited extent with poor results, the deepest shaft has been from 92 to 93 feet by Hornby's and Gregory's party. In September last, application was made by the Siberia Progress Committee, to the Hon. the Minister for Mines, for testing the ground by means of bores. Alluvial gold was found in November near the Majestic Gold Mine by means of prospecting shafts at a depth of 26 feet. This lead is about three-quarters of a mile due East of the hilly ground on which the Invincible and Camperdown Gold Mines are situated, where some rich lodes are being worked, from which this gold may have been derived. There have been also several patches of surface alluvial gold found adjacent to these lodes. Boring would materially facilitate operations, as there are no surface indications of the deep lead, it being across the toe of the hill slope. The yield of the workings so far has been about 8dwt. of gold per man per week; just sufficient to pay for food and encourage further prospecting. The area of the lead can only be of small extent. The material sunk through is a compact, dry, ferruginous sand, resting on a diorite bottom.

* Annual Progress Report of the Geological Survey for the year 1900. Perth: By Authority: 1901, pp. 25-26.