

PRELIMINARY REPORT ON THE OCCURRENCE OF IRON ORE  
AT MEREDITH, PARADISE, ROCKY, AND WHYTE RIVERS

INTRODUCTION

Preliminary Statement

Last year the Tasmanian Iron and Steel Company was formed for the purpose of acquiring leases of the more important iron-bearing areas not already alienated. The occurrence of the iron ores, magnetite and hematite in the country south of Browns Plain came under the notice of the Company, and at their solicitation the writer was detailed to investigate and report on the value of the deposits. The following is a brief account of his researches covering the area along the line of lode between Meredith and Whyte Rivers.

General Statement

The work outlined in this report was carried out during the period extending from 24th April to 16th May. Of this short space ten days were occupied in travelling and camp removal leaving only eleven days for actual investigation. The work was performed under very difficult conditions, but the results obtained were sufficient for the purpose in view: - to form a rough estimate of the value of the deposit as a source of high grade iron ore.

This is the first official reference to the Meredith and Paradise orebodies, but brief reports have been furnished on the Rocky River occurrences. The early investigations, however, were in relation to the associated gold-bearing copper and pyritic iron ores and not particularly to the magnetite deposits which form the subject of this report. These immense deposits have been noted repeatedly by the Geological Survey, but their possibilities as sources of iron had not received consideration until the recent enquiry. The form the southern extension of the Rio Tinto belt now held under lease from the Crown by G. and C. Hoskins Ltd. of Lithgow and Sydney, and are in all essential features similar to them.

Location and Area

This portion of the iron belt lies 32 miles by road south-westward from Waratah, and eight miles from Corinna, on Pieman River, it is proposed to complete the construction of the Waratah to Corinna Road next summer. These deposits are situated south of Corinna Road, and may be reached by way of the Rocky River track or by boat from Corinna to Meredith landing thence by Jones' track to the Meredith or southernmost orebody.

This report covers a strip of country on the course of the iron belt half a mile wide and six miles long. Of this area 720 acres has been leased by J.T. Wynne and S. Coundon.

Physiography, Topography

This area forms a part of a peneplain, 1000 feet above sea-level, lying at the base of Meredith Range and Mt. Livingstone. The undenuded parts of the peneplain are covered with the Tertiary sediments; arkose, mudstone, conglomerate and unconsolidated gravels. Some of these sediments contain gold and tin ore and osmiridium, but few rich concentrations are known. The peneplain is very

minutely dissected by many westward flowing tributaries of the Pieman and their affluents, which have laid bare the orebodies at the points of intersection. With the exception of Whyte River, the course of which is at Magnet Range 20 miles distant, the larger streams, Rocky, Paradise and Meredith Rivers, rise in the neighbouring mountains. They may be regarded as torrential streams dependent upon a heavy and almost continuous rainfall. In summer the amount of drainage is very small.

### Meteorology

The annual precipitation varies from 80 to 100 inches and is fairly evenly distributed. Spring and Autumn are characterised by calm, misty weather; winter by almost continuous rain and an occasional fall of snow; and summer by warm and dry weather. There are no extremes of heat and cold, the shade temperature varying from 90 degrees in summer to 40 degrees in winter.

### Geologic Relations

The area with which this report deals is occupied by schists of various kinds belonging to the great Pre-Cambrian group so well exposed in this and other parts of Tasmania. Adjacent thereto on the east side are metamorphosed slates and sandstones, tentatively ascribed to the Cambrian. There is a distinct unconformity in strike and dip between these formations and the latter does not exhibit a similar degree of deformation. Farther eastward lie the great intrusive granite mass of Meredith Range and the extensive bodies of gabbro and serpentine fringing it, both of Devonian age. The only undoubted Devonian intrusive discovered in the area under review is the gabbro-amphibolite exposed at the mouth of Meredith River, but, perhaps the fresh gabbro associated with the ore-bodies is of the same age.

One member only of the Pre-Cambrian schists is of particular interest from an economic point of view. That is the igneous member consisting of hornblendic, serpentinous, and talcose schist in which the iron ore deposits are contained. It is exposed for twenty five miles in this district and is nearly half a mile in width. The course varies from 15 degrees east of north at the southern end to 15 degrees west of north near Rio Tinto, and the dip is easterly.

The extreme result of metamorphism is illustrated by silver-grey coloured talcose schist which has a very brilliant lustre; where the transformation is not as intense it is a pale banded gneissose rock in which the component minerals are hardly distinguishable; again, it is coarse and gabbroid in texture. Under the microscope it is seen to consist of fibrous green hornblende, plagioclase, apatite, quartz and much epidote. Talc, actinolite, asbestos, calcite, dolomite, and serpentine represent the various stages of alteration. The original rock was essentially a gabbro-amphibolite. The gabbro referred to as occurring at intervals in the schist-member is devoid of banding, foliation, or schistosity. Considering the extreme metamorphism of the schist it is inconceivable that portions should have escaped injury. Probably this is of later age and intrusive into the igneous schist.

A basic igneous schist member of the Pre-Cambrian containing copper ores has been observed by the writer at Badger Head, Quamby Brook, Preolenna, Dasher River, Forth River and elsewhere and may be related to the one described herein.



Of these minerals magnetite only is of any economic value here as an ore of iron. It occurs in direct association with the other ores, as a rule in distinct lenses and not appreciably contaminated by pyrite or any other mineral of an injurious character. At the outcrop partial alteration to hematite and limonite is noticeable and an occasional penetration of pyrite is found, not in sufficient quantity however to seriously affect the value of the ore. The primary ore outcrops at surface and in the more massive sections of the orebodies crystals in the form of dodecahedra are common.

Hematite is the preponderant component of the orebody considered as a whole. It has been derived from original pyrite with which it is everywhere associated and in places intermixed. Hematite-pyrite bodies are more highly developed on the western side of the magnetite leases, but in some sections sulphidic ore constitutes the whole mass.

Pyrite, of the primary minerals, is the more abundant. Its presence in association with iron ore for smelting is objectionable and if in appreciable proportion the ore is valueless. Associated with the pyrite but in very small proportions, are ores of copper, nickel and cobalt, and gold is a constant though variable accessory component.

It is noteworthy that the bed of every stream flowing westward across this iron belt has been worked for gold up to the point of intersection - beyond that point gold has not been found in any considerable amount. The deep placer or alluvial deposits of Lucy Spur, Middleton Creek, Corinna, Brown Plain, and elsewhere in the vicinity have been shed from this ore in the processes of decomposition and distintegration. Moreover, the famous Rocky River nuggets, the rich Long Plain detritus, and the Specimen Reef ore were derived from this great body. The remarkable feature of the deposit is the even distribution of gold at every point of the outcrop from Meredith River to Specimen Reef, a distance of 25 miles. As a rule the gold in the orebodies is of very fine grain size, and it is also equally fine in many of the alluvial deposits, but coarse gold has been found attached to iron ore and in Rocky River very large nuggets were found. It is reported that over 1000 ounces of coarse gold was obtained in the operation of sluicing the bed of Paradise River a few chains below the iron outcrop. The greater number of these nuggets were probably formed by accretion of particles.

The average content of gold in these deposits is not known, but is certainly low. It may be mentioned here that the operations of the companies working the alluvial ground and also of those engaged in mining the primary ore were unsuccessful. However, the deposits are so large and extensive that the recovery of other products in addition to the gold might lead to commercial success.

In the following table an interesting comparison is given of the composition of the several varieties of schist and the fresh unaltered gabbro. Numbers 391 and 392 represent the composition of the gneissose gabbro and typical schist respectively - a remarkable similarity is noticeable. The most striking feature is the absence of lime and this distinguishes them from the fresh gabbro.

The Quantity of Ore Available

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As already mentioned the amount of developmental work performed on these orebodies is very little, not sufficient to prove of any value in dimensions of these deposits has been attended with considerable difficulty. In the first place, the length and breadth of the lenses could not be determined with any degree of accuracy because they are covered with clay and vegetation on the ridges and have not been exposed by any exploratory works. Furthermore, they have not been intersected at depth by drilling or tunnelling, save in places where pyritic bodies were known to occur. It will be seen therefore, that a true valuation is impossible and an approximate estimate only can be attempted. In the following statement no account has been taken of the comparatively large hematite-pyrite deposits, because this ore is unsuitable, but it may be safely affirmed that impure material of this kind occurs in the proportion of ten to one of magnetite, and in places it constitutes the whole orebody. As magnetite only is desired or is of any present commercial value the quantities given herein relate to that mineral, and the calculations of the "actual" reserve are based on a vertical extent of only 200 feet.

It has been considered advisable to estimate quantities on the basis of "actual" reserve and of "potential" reserve. The actual reserve is that calculated from three dimensions, which obviously cannot be determined in the underdeveloped and incompletely exposed orebodies. The potential reserve is that quantity which on reliable evidence may be assumed to occur but of which the actual dimensions cannot be obtained. In addition there is a "possible" reserve which cannot be indicated by figures.

The undeveloped state of these deposits precludes the possibility of attempting an estimate of actual reserve except in the cases of the Meredith and the Rocky River bodies.

Under these conditions the following figures convey an idea of the amount of ore available:-

Name of Orebody	Actual Reserve (Tons)	Potential Reserve (Tons)	Possible Reserve
Meredith River ) Duffer Creek )	428,570	1,285,710	Very considerable
Finlay Creek	-	-	Considerable
Tandy Creek	-	-	"
South Branch	-	92,000	"
Paradise River	-	-	Very considerable
Camp Prospect	-	-	" "
Cataract Creek	-	-	Considerable
Rocky River ) Nolan Creek )	471,430	522,000	"
Rocky River Association	-	149,000	"
	900,000	2,048,710	

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TABLE OF ANALYSES NO. 1.

Number	Description of Sample	Silica	Ferrous Oxide	Ferric Oxide	Alumina	Pyrite	Titania	Maganous Oxide	Lime	Mag-nesia	Potassa and Soda	Carbonic Oxide
389	Fresh Gabbro Amphibolite	46.00	0.77	11.30	15.89	1.12	2.20	0.37	12.05	7.24	3.38	
390	Talc Schist	39.80	3.61	14.30	4.80	1.31	0.20	0.37	7.55	19.90	-	3.64
391	Igneous Schist	52.36	6.70	8.58	16.71	0.84	0.30	0.89	trace	7.24	3.50	-
392	Igneous Schist	42.00	12.13	14.97	16.28	0.71	0.60	0.45	trace	6.16	3.03	-

Quality of the Ores

Samples of the ores were taken from each of the several large orebodies. They are representative of the quality of the materials at the outcrops only and do not necessarily indicate the nature and the value of the ores as a whole. At surface the magnetite has suffered the effects of oxidation, but not in the same degree as the pyrite-hematite ore. At depth the ores may be cleaner and richer in iron, or they may be more pyritic and siliceous and useless for the purpose in view. The evidence provided by exposures in the body of the more important streams suggests that the magnetite portion of the orebodies is not appreciably contaminated to a depth of 150 feet. It is only at such points that the orebodies have been exposed at depth. Upon this meagre information the quality of the ore cannot be accurately determined, consequently, the statements appearing herein can be taken only as an expression of the value of the outcropping ore at points where the lodes are cut by streams.

The analyses clearly show that the hematite ore is of no commercial value as a source of iron owing to its high content of silica and pyrite. Copper, another deleterious impurity, although present in very small amounts may prove decidedly troublesome.

The following table of analyses presents a fair indication of the quality of the ores at the several outcrops.

TABLE OF ANALYSES, NO. 2

NUMBER	Locality	Nature of Ore	IRON Ferrous oxide	IRON Ferric oxide	Silica	Alumina	Mangan-ese Oxide	Titania	Chromic Oxide	Lime	Magnesia	Phosphoric Acid	Iron Sulphide	Loss on Ignition.
381	Nolan Creek	Magnetite & Limonite	13.58	78.66	2.40	3.31	-	0.40	-	-	trace	trace	0.068	1.40
382	Nolan Creek	Magnetite & Limonite	22.57	64.47	8.80	3.18	-	0.30	trace	-	trace	trace	0.054	
384	Meredith River	Magnetite	10.32	87.52	1.00	2.54	-	trace	-	-	trace	-	0.027	
385	Paradise River	Hematite			15.40	2.91	-	trace	-	-	trace	-	0.74	
386	Paradise River	Hematite	7.20	70.21	21.08	1.78	-	trace	-	-	trace	-	0.12	
387	Rocky River	Magnetite	16.20	53.85	22.24	5.22	-	-	-	-	-	0.03	3.33	
388	Rocky River Association	Magnetite & Limonite	17.22	71.75	2.68	6.04	-	-	-	-	-	trace	0.91	
393	Cataract Creek	Hematite	10.28	54.34	29.36	4.74	-	-	-	-	-	trace	2.58	

## Transport and Communication

Corinna on the Pieman River, 11 miles from the heads, is the natural outlet for the products of these mines. In the seventies and eighties it was the centre of mining activity in the district; not it is deserted, and only two buildings remain to mark the site of the once prosperous township. This port is destined to become again an important shipping centre for the products of the mines and forests of the districts lying to the West of Magnet and Meredith Ranges. The gap in the road from Waratah is to be constructed next summer when it will become accessible by all road vehicles from any part of the Island.

From Corinna all the important areas could be made easily accessible by rail. The surface of the country is much broken by the numerous tributary streams of the Peiman; but there are no serious obstacles to railway construction. Branch lines would follow the valleys of the larger streams on easy grades with the load; the trunk line, on the contrary, would follow the course of the Pieman and cross the valleys of the tributary streams flowing from the north and east.

The water at Corinna is very deep close to the banks and the stream there is nearly 500 feet wide. A few chains higher up stream in the slack water on the north bank is a splendid site for wharves and a convenient place for turning large vessels.

Although not one vessel has been lost in this river attention should be given to the entrance which is unsafe for navigation in rough weather.

## Development

No work of any kind has been performed on these ore-bodies with the set purpose of estimating their content of iron. It was the intention of the lease-holders to open some of the outcrops by trenching in order to facilitate the work of this investigation, but all that could be performed in the time available was the removal of trees and scrub from some of the important bodies.

Many years ago some of the associated ore-bodies were explored for gold and copper by means of trenches, shallow shafts, and adits. These works, spaced at long intervals, intersect only one body of magnetite. In fact it may be said that the operators avoided the magnetite bodies considering the pyritic material the chief source of the gold and copper.

The ore-bodies are exposed to advantage in the valleys of the larger streams, occasional outcrops only being found on the intervening ridges. The ridge outcrops are generally small and indefinite, and their dimensions cannot be determined because the surface soil of clay almost completely covers them. It is quite probable that the inter-stream sections of the lode belt contain the more important bodies in consequence of the greater power of resistance which the magnetite material affords to the denuding effect of erosive agencies. This could be ascertained by drilling or by mine openings, the former method being preferable. As it is now the investigator is dependent solely upon the haphazard trenching of the streams for information concerning the nature of the materials.

Mining

The configuration of the country is such that open-cutting methods of excavation may be employed on every ore-body. Suitable points of attack are found at the places where the streams intersect the lodes. At such places not only may the ore be excavated to the depth of the valley below the outcrop but the overburden and the waste ore may be removed at the same time without hindrance to that operation. The depth to which open-cutting can be performed is limited only by the height of the outcrop above the working level. If, however, the lenses of ore became too narrow mining methods would be employed in preference to open-cutting. Nearly all the known lodes can be worked by means of open-cuts to a depth of 100 feet and some of them to greater depths. An estimate of the cost of mining or excavation could not be attempted at this stage.

THE MINING PROPERTIES

Area

Two areas on the Iron Belt are now held under lease from the Crown by J.T. Wynne and S. Coundon. The northern one is known as the Rocky River area and comprises two 40-acre sections; the southern or paradise - Meredith area comprises eight 80 acre sections and is separated from the other by two miles of unleased land.

These sections enclose a group leased many years ago for gold but long since abandoned. During the period of early operations a large area was cleared of forest and thereby made easy of access. Now it is covered with very dense scrub, more difficult to penetrate than the original forest, and the tracks, completely overgrown, are impassable.

Lease 9111/M, 80 acres

Meredith River Deposit

In the valley of Meredith River four miles east of its debouchure, a body of iron ore 300 feet in width is exposed to a depth of 100 feet. It extends beyond the southern boundary of the section, northward it is well exposed in Duffer Creek and crops out again on a high hill farther on.

The ore consists chiefly of hematite (derived from pyrite) and subordinately of magnetite. Associated with it are pyrite, pyrrhotite and chalcopyrite in small proportions, with also a little gold and silver. As a rule the ore is compact and hard, fine in grain, and very massive. Magnetite, 30 feet in width, occupies a position in the centre of the ore-body and apparently is of high quality and free of pyrite.

The deposits, especially the hematite, are conformable to the enclosing igneous igneous schists which have a north-easterly trend and dip south easterly at a high angle. It is seen that the hematite, limonite and pyrite components exhibit the structure of the rock in which they are contained, but the respective crystals show no sign of deformation and are otherwise unaffected.

How far this lenticular body extends it is impossible to tell. It has been traced nearly 1000 feet, and the magnetite portion nearly 500 feet. An adit had been driven northward from the bank of the river in the hematite portion of the body. In the adit the rock is quite soft and is not wholly replaced by hematite. As an ore of iron it is of no value. The massive ore on the west side of it consists largely of magnetite, and stands out in bold crags 100 feet above river level. This constitutes the valuable section of the deposit. An idea of its average content may be formed by reference to the table of analyses.

Lease 9112M, 80 acres

Duffer Creek Deposit

This is evidently the northern continuation of the Meredith River lens the nature of which it so closely resembles. In the bed of the creek hematite in massive blocks occurs, part of it of high quality, part poor and contaminated by quartz and pyrite. Magnetite does not show out prominently here, but it may be in a larger body than it appears. Here, as in every other occurrence on the line of lode, the data available relating to the dimensions and quality of the ore is very scanty, and quite insufficient to form an opinion nor even hazard a guess as to the value of the deposit.

Lease 9113M, 80 acres

Finlay Creek Deposit

North-westward of the Meredith lens of ore in the valley of Finlay Creek a parallel body of hematite is exposed. The outcrop is marked by many very large boulders of hematite and by a water-fall of fifteen feet in the creek bed. This lens appears to peter out at the creek for no ore can be seen on the north side. The actual dimensions of this ore-body are impossible of determination until developmental works have laid bare the unbroken lode. In consequence of this no attempt was made to ascertain the quality of the ore nor of the quantity available.

Lease 911M, 80 acres

Near the southern boundary of this lease a shaft was sunk 20 feet in soft pyritic schist for gold. No iron oxide ore occurs there, but further northward in the bed of Tandy Creek large boulders of limonite are found. The source of the boulders is evidently near at hand as the lode lies only a few chains east of the track.

On the ridge south of Tandy Creek the lode is completely covered with soft clay.

Lease 9115M, 80 acres

South Branch Deposit

This body shows in the creek bed as thin bands of pyrite and hematite four to six inches wide. Sixty feet above creek level and on the north side the ore body widens to 12 feet and 70 feet higher it is 16 feet in width. At this point the body consists of a band of clean magnetite encased in hematite and limonite. Near the sides of the deposit the ore consists of alternate bands,  $\frac{1}{8}$  inch thick, of hematite and pyrite with a fairly high proportion of quartz. Pyrite occurs as kernels in large blocks of hematite, and even in magnetite it is occasionally found. The outcrop can be traced 200 feet farther northward, whence the lode dips beneath the clay soil and is not seen

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Lease 9116M, 80 acres

No ore of any kind has been uncovered on this property, nor has an attempt been made by exploratory works to discover any.

Lease 9117M, 80 acres

Paradise River Deposit

A very large body of ore 200 feet in width showing replacement of schist by pyrite and its ultimate or part transformation into hematite occurs in the valley of Paradise River. The ore being of replacement formation conforms in strike and dip to the containing country rock which here trends 15 degrees east of north and dips at 55 degrees to the eastward. Magnetite is entirely absent, and very little high grade hematite is seen, the ore consisting of pyrite, hematite, and quartz in banded formation. A striking feature is the close banding of hematite and pyrite which tends to suggest that the hematite here is not an oxidation product of pyrite, but of independent deposition and contemporaneous with it and the accompanying quartz. There is evidence to suggest intense silicification in the containing schists. This quartz should not be confused with the earlier development exemplified by the veins of quartz which may be seen ramifying through the schists at every point of exposure. The ore-body stands out prominently in the form of cliffs rising upwards of 200 feet above the valley floor.

From the foregoing it will be seen that as a source of iron ore the lode is valueless at this point. It is interesting to record that over 1000 ounces of coarse gold was obtained from the river bed a few chains down stream.

Camp Prospect

At the camp site near the northern boundary of this section a few large boulders of hematite - magnetite ore project through the clay soil. This may prove to be directly connected with the Paradise River lens which however has not been traced far along its course. The boulders when broken show typical steel-grained magnetite altering to hematite and limonite. The dimensions of this lens cannot be determined until it has been exposed by exploratory works.

Lease 9118M, 80 acres

Neither hematite nor magnetite has been found on this section. Some years ago a shallow trench was cut into the ore body and fairly rich gold-bearing pyrite and chalcopryite was revealed, but no other exploratory works have been performed.

Lease 9109M, 40 acres

Cataract Creek Deposits

A few chains down stream from the eastern boundary of this section the lode is marked by many large boulders of hematite and smaller boulders of magnetite. The ore could not be seen in place because it is covered with boulders in the stream bed and clay on the banks. In every respect it resembles the ore of this class found in other deposits and is gold bearing. The proportion of magnetite is small at this point. Pyrites and quartz accompany the hematite and take away its value as an ore of iron. This stream has been worked up to the lode for gold.

Lease 9110M, 40 acres

Rocky River Deposits

At the Rocky River Mine, situated in the angle formed by the junction of Whyte and Rocky Rivers, extensive underground workings have been cut into a large body of magnetite. These workings were not accessible at the time of the recent investigations. From old records it is found that they consists of an adit driven from the bank of Whyte River a distance of 800 feet in a direction 12 degrees east of south, and several crossouts from the adit driven at intervals to determine the extent and nature of the ore-body at particular points. These works, over 200 feet below the outcrop, show it to be a lenticular mass of magnetite, attaining a maximum width of 30 feet, and coinciding in strike and dip with the schists.

Nearby is a very large body of fresh gabbros which almost invariably accompanies the massive bodies of magnetite. In the accessible part of the adit clean talc has been developed in the schists and other metamorphic effects are much in evidence. Associated minerals are ores of copper, barium, nickel and cobalt, with also asbestos, gold, and silver, - none however, in payable quantity. The magnetite ore, to be seen in the dumps near the entrance to the tunnel, contains a rather high proportion of pyrite and other impurities. Ore of that nature is of no value for the purpose in view, but according to earlier reports the magnetite body cut in the west crosscut is of higher quality and almost free of pyrite. It is interesting to note that the water flowing from this adit contains only traces of iron in solution, whereby indicating a low pyrite content.

Another long adit has been drive east of and higher than main adit in massive gabbro. An examination of the material on the dump shows that no ore was intersected in this opening.

About 200 feet west of the entrance to main adit a shaft has been sunk to a depth of 40 feet in quartz schist. This is outside the magneite zone.

Nolan Creek outcrop

At the head of a very small creek flowing into Rocky River a large body of magneite occupies the summit of a well-defined ridge 200 feet above river level. This ore-body is 30 feet wide and as is appears to form the southern part of the lens cut in main adit, it is one of very considerable importance. It occurs in decomposed non-schistose gabbro which in its altered condition is a soft yellowish-white rock with the component minerals easily distinguishable. The ultimate decomposition product of this rock is the deep yellow clay found at all points in the line of lode.

The magnetite is generally compact and hard, but alteration to hematite and limonite is conspicuous on weathered surfaces. Quartz and pyrite, apparently, are absent. Barytes is reported as occurring in the neighbouring schists.  
Rocky River Association Mine

A body of altered magneite outcrops on the north bank of Rocky River about 450 feet above its junction with Whyte River. An adit, now caved at the entrance, has been driven northerly on the course of the ore-body from the river bank. At this point 8 feet width of ore has been exposed by the removal of the vegetable and soil cover. Its other dimensions could not be obtained.

The magnetite is much altered, the ore now consisting largely of limonite.

The Rocky River group of iron ore deposits is easily accessible from Corinna. Many years ago an engineer named Studholme in the employ of the Rocky River Company surveyed the route of a railway from Corinna along the north bank of Whyte River to the mine. The distance was found to be seven miles the grades easy, and no serious obstacles to railway construction were passed on the way. A railway long this route would serve also the Graham Creek area.

CONCLUSION

The examination of this area shows that a large number of lenticular bodies of iron ore many in association with others of a sulphidic nature, are distributed through a basic igneous member of the Pre-Cambrian schist formation. It is found also that ore is exposed at every point where this belt is intersected by streams, that is, at the weakest places. As magnetite is a stable mineral and, in massive formation, strongly resistant to erosion it is justifiable to assume that the more important bodies occur in the interstream sections. The ridges are so thickly covered with vegetation and the clay decomposition product of the containing schists that the ore-bodies in these sections of the belt are almost completely concealed. It is significant that where outcrops do occur on the ridges, magnetite is more prominent than hematite or pyrite and appears to be in massive form indicating that the trenched portions are near the ends of lenses. But, as no artificial openings have been made into the ore-bodies at these points to test their extent and value it is idle to speculate on probabilities. The remarks contained in this report with reference to the untrenched parts of the ore bodies are accordingly indefinite and inconclusive.

The conditions under which the examination was performed were unsatisfactory to the investigator and to the lessees of the properties. A true estimation of value cannot be made until the interstream sections of the lodes have been intersected by bore or by mine openings.

A.M. Reid

21st February 1924