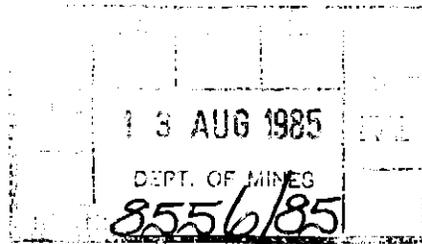


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A report prepared for Gold Fields Exploration Pty. Limited

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FURTHER COMMENTS ON GEOLOGY AND EXPLORATION AT

MT. LYELL, TASMANIA

Richard H. Sillitoe



March, 1985

	<u>PAGE</u>
SYNOPSIS	1.
A. INTRODUCTION	2.
B. ORE FORMATION	3.
1. Timing of mineralization	3.
2. Origin of mineralization	5.
3. Implications for exploration	7.
4. Recommendations	7.
C. LATE CENOZOIC FEATURES	9.
1. Pre-glacial supergene effects	9.
2. Glacial effects	9.
3. Implications for exploration	10.
D. GOLD EXPLORATION	11.
1. Known gold mineralization	11.
2. Possible gold targets	11.
3. Recommendations	12.
E. REFERENCES	14.

FIGURES

	<u>Following Page</u>
Fig. 1. Schematized settings of Mt. Lyell ore bodies and associated alteration	3.
Fig. 2. Proposed drill site to test for North Lyell-type body	8.
Fig. 3. Distribution of glacial deposits at Gormanston	10.

SYNOPSIS

A 10-day reexamination of the Mt. Lyell copper deposits has confirmed that North Lyell-type copper-silver ore bodies were developed by replacement of rocks as young as the Early Ordovician Gordon Limestone. Emplacement post-dated an early folding phase ( $D_1$ ) of uncertain age but pre-dated the main Middle Devonian deformational event ( $D_2$ ). Mineralizing fluids are of unknown parentage, but are thought most likely to have been generated during emplacement of an Early Devonian porphyry stock (that would have been rendered indistinguishable by  $D_2$  deformation) or during early stages of the Middle Devonian orogeny, possibly during  $D_1$  (i.e., metamorphogenic fluids). The widespread pyrite mineralization and the enclosed Prince Lyell- and Blow-type copper ore bodies in the Mt. Read Volcanics are tentatively considered to have been formed at the same time and from the same fluids as those responsible for the North Lyell-type bodies, although an earlier volcanogenic origin cannot be ruled out on the basis of available evidence.

North Lyell-type ore bodies were emplaced at an abrupt redox front that coincides closely with the Great Lyell fault. The copper-silver ( $\pm$ gold) ore is everywhere in direct contact with, and in some cases overlain by, hematite-barite ( $\pm$ chalcedonic silica) replacement bodies. Computerization of drill-hole coordinates, drill-hole intersections of the Great Lyell fault and hematite-barite bodies, and the locations of all mined-out North Lyell-type bodies should generate drill targets, especially in the Gormanston, North Lyell-Lyell Blocks and Lyell Comstock areas.

Evidence from core obtained during the 1984 drilling campaign permitted interpretation of thick, poorly consolidated deposits at Gormanston, Lyell Blocks and McDowell P.A. as the products of fluvioglacial and periglacial processes. Those at Gormanston and McDowell P.A. fill glacially eroded or outwash channels. Future drilling should try to avoid large thicknesses of these barren deposits.

None of the hypogene gold mineralization exploited at Mt. Lyell would constitute a gold-only target at the present time, although an average of 2.7 gm/tonne Au was reportedly obtained from the high-grade North Lyell-type bodies on the edge of The Blow. Neither is it possible to predict the sort of gold-only target that might be present at Mt. Lyell given the enigmatic nature of the known mineralization. The most effective exploration technique is to continue the present programme of selective sampling of drill core and surface rock chips for gold analysis.

A. INTRODUCTION

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As part of a 6-week assignment in eastern Australia for Gold Fields Exploration Pty. Limited, the writer spent 10 days (from 16-28 March, 1985) reexamining selected aspects of the geology and mineralization at Mt. Lyell. The visit was a follow-up to a previous appraisal of the Mt. Lyell district in January-February, 1984, and was arranged to up-date the writer on the results of more recent work carried out by M. Bird, G. Arnold and M. Jones.

The first seven days of the visit were spent with G. Arnold, and addressed four principal topics : structural history; timing and origin of the mineralization; glaciation; and gold potential. Field work was combined with a mine visit and a box-by-box inspection of core from the five diamond drill holes completed during 1984. Two final days spent with M. Jones were devoted to the district's gold potential.

This report summarises the writer's current opinions on ore formation in the district, the effects of Pleistocene glaciation, and gold exploration at Mt. Lyell. Structural aspects will be reported by G. Arnold, and are only referred to here as they impinge on models of ore formation.

Acknowledgement is due to Gary Arnold and Mel Jones for collaboration with field work and extensive discussions. This report reflects their technical input but does not necessarily present their precise opinions. Thanks are also due to Jeff Beddows for participation in the field programme, John Carswell for conducting underground visits to the Prince Lyell and 12 West ore bodies, and Paul Roberts for organizing the visit and for general discussions.

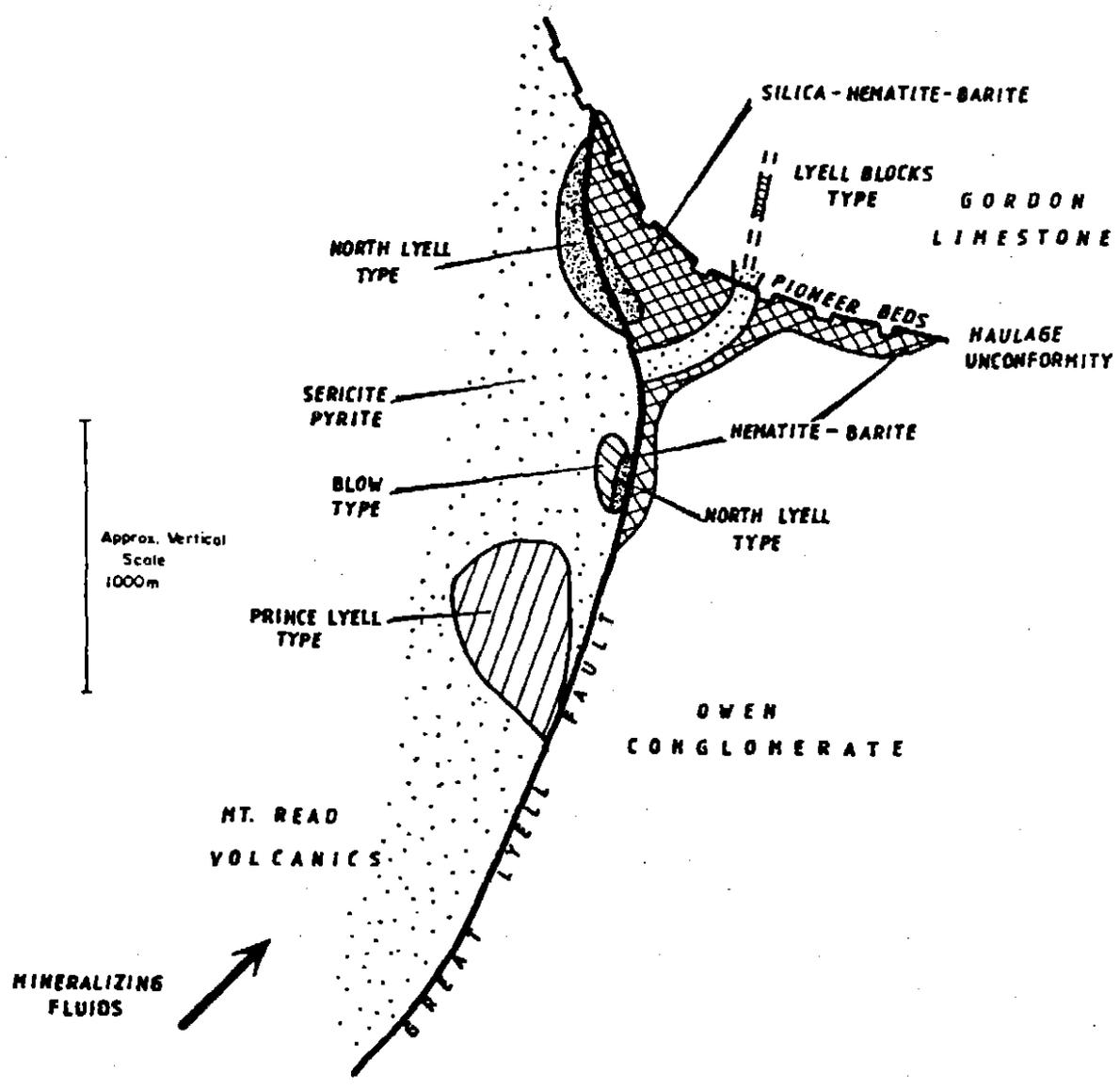
1. Timing of mineralization

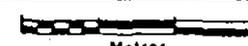
This reexamination of evidence for the timing of ore deposition at Mt. Lyell, combined with the results to date of G. Arnold's structural mapping, have resulted in little change in the conclusions presented previously (Sillitoe, 1984).

It is reaffirmed that a major pulse of copper and silver deposition took place at Mt. Lyell later than lithification of the Early Ordovician Gordon Limestone. This mineralizing event resulted in bodies of hematite-barite (+chalcedonic silica), high-grade North Lyell-type copper-silver ore, and sericite-pyrite alteration. The hematite-barite bodies were emplaced mainly in Owen Conglomerate, both in the immediate footwall of the Great Lyell fault and immediately beneath the Haulage unconformity (Fig. 1). Locally, however, they also replaced Pioneer Beds and Mt. Read Volcanics. The high-grade North Lyell-type mineralization abuts massive hematite-barite and developed at the expense of Mt. Read Volcanics as well as Owen Conglomerate, Pioneer Beds and/or Gordon Limestone. Sericite-pyrite alteration is mainly confined to the Mt. Read Volcanics, but relatively small volumes of Owen Conglomerate, Pioneer Beds and Gordon Limestone are also prominently affected (Fig. 1). Where these rocks were altered, the impression is gained that sericitization moved outwards from the Mt. Read Volcanics as a restricted protrusion. Such pyrite-bearing sericitic protrusions on the access road to Batchelor's quarry and in core from DDH 1102 are flanked by hematite-barite replacement.

In DDH 1102 (193-219 m), intensely sericitized Pioneer sandstone is inferred to be <10 m from the overlying Gordon Limestone given the restricted thickness of the Pioneer Beds in the North Lyell area (and possibly elsewhere too). This observation constitutes strong evidence that ore fluids from the North Lyell area accessed the Gordon Limestone to generate the Lyell Blocks copper and silver mineralization.

G. Arnold has recognized that the Mt. Lyell area was subjected to two main deformational events ( $D_1$  and  $D_2$ ). The first generated tight, north-trending folds that are most conspicuous where they affected the Mt. Read/Owen contact (the Great Lyell fault). Some of the irregularities in the Great Lyell fault, as well as its duplication (e.g., Tharsis and Razorback Ridges), may be attributed



GOLD FIELDS EXPLORATION PTY. LIMITED	
<b>SCHEMATIZED SETTINGS OF MT. LYELL ORE BODIES AND ASSOCIATED ALTERATION</b>	DRAWN BY : R.S.
	DRAFTSMAN : S.F.
	DATE : Mar. 85
	REVISIONS :
SCALE 1	 Metres
FILE NO	FIG 1

006 to  $D_1$  folding rather than to faulting. Emplacement of North Lyell-type mineralization and hematite-barite bodies clearly post-dated the effects of  $D_1$ .  $D_2$  is characterized by a steep, northwest-trending penetrative schistosity that has long been recognized to have overprinted all significant alteration and mineralization at Mt. Lyell. G. Arnold has also recognized that  $D_2$  folds rather than cross-faulting caused many of the local digitations in the Great Lyell fault. This observation negates the conclusion reached by many previous workers (including the writer) that cross-faults contributed to the localization of ore at Mt. Lyell.

It is well known that  $D_2$  was a Middle Devonian event (the Tabberabberan orogeny). The age of  $D_1$  is less well constrained, and could be a Late Cambrian event (linked to development of the Haulage unconformity) or an early phase of Middle Devonian orogeny. It is therefore difficult at this stage to decide whether ore formation of the North Lyell type was a post-Early Ordovician, pre-Middle Devonian event, or was an early phase of the Middle Devonian orogeny. The latter possibility is tentatively favoured at this stage, but awaits confirmation by a more regional study planned by G. Arnold.

The hematite-barite and North Lyell-type copper-silver bodies, as well as other ore bodies at Mt. Lyell, were cut by syn- $D_2$  gash fractures filled with milky quartz, chlorite, specularite and/or chalcopyrite. They testify to the localized remobilization of copper (and perhaps other metals) but add little to the Mt. Lyell deposit.

The age of emplacement of the Prince Lyell- and Blow-type mineralization at Mt. Lyell remains enigmatic. Both are hosted exclusively by the Mt. Read Volcanics, and have yielded no definitive evidence for their timing, except that emplacement was post-Mt. Read Volcanics and pre- $D_2$ . However, indirect evidence suggests that ore in the Mt. Read Volcanics is coeval with the North Lyell-type mineralization. Particularly compelling is: the close proximity of a major chalcedonic silica-hematite-barite body (in Owen Conglomerate) alongside the North Lyell orebody and a similar chalcedonic silica-pyrite-chalcopyrite body (in Mt. Read Volcanics) at Crown 3; the separation of hematite-barite and disseminated pyrite-chalcopyrite by a massive bornite-chalcopyrite body at Lyell Tharsis; and the reported occurrence of high-grade silver and copper ore (with some gold) between hematite-barite and massive pyrite at The Blow. However, an earlier volcanogenic origin for Prince Lyell- and Blow-type bodies cannot be entirely discounted at this stage.

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2. Origin of Mineralization

On the basis of observed spatial and temporal relationships, the preferred model for North Lyell-type mineralization involves ingress of ore fluids from the Mt. Read Volcanics (or from rocks farther west) and copper-silver deposition at sites where they encountered the Great Lyell fault. Such a model could also effectively explain emplacement of the Prince Lyell and Blow types of mineralization, as described previously (Sillitoe, 1984).

Following this model, fluids would have been capable of sericitic and chloritic alteration and pyritization throughout a large zone of the Mt. Read Volcanics. Pyritization gave way to pyrite-chalcopyrite deposition to produce Prince Lyell-type bodies as the Great Lyell fault was approached. Massive pyrite (plus chalcidonic silica and copper minerals) at The Blow and Crown 3 could have been produced at this time by total replacement of Mt. Read Volcanics. Fluids became progressively depleted in iron and sulphur and enriched in copper in order to generate North Lyell-type bornite-chalcopyrite bodies against the Great Lyell fault. The Great Lyell fault acted as a redox front, beyond which iron was largely deposited as hematite. This change in oxidation state may be attributed to mixing of the mineralizing fluids with more oxidizing connate fluids, buffered with respect to hematite, in the Owen Conglomerate red-beds. Cooling induced by fluid mixing would have contributed to dumping of chalcidonic silica and barite with the hematite. Periodic release of fluids ponded beneath the silica bodies generated hydrothermal breccias, which were cemented by hematite and barite. Locally, the unmodified, weakly acid and reduced fluids from the Mt. Read Volcanics gained access to Owen Conglomerate, Pioneer Beds and/or Gordon Limestone, thereby causing eastward protrusions of the redox front. These protrusions appear to have acted as fluid conduits for Lyell Blocks-type mineralization in the Gordon Limestone. If this type of mineralization was originally rich in hypogene chalcocite, mineralizing fluids must have become still more copper-rich and sulphur- and iron-poor eastward.

At this stage, we can only guess at the type of hydrothermal system that gave rise to this inferred sequence of ore-forming events at Mt. Lyell. Four general types of hydrothermal system may be suggested; of these, the first two seem to be more likely possibilities than the second two.

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First, an Early Ordovician or, more likely, an Early Devonian intrusion was emplaced in the Mt. Read Volcanics and supplied all or part of the ore components. If the intrusion were a small porphyry stock, it would be extremely difficult to distinguish from the enclosing volcanic rocks because of the tight folding and schistosity imposed during  $D_2$ , especially if the stock does not outcrop at the present surface. The large size of the sulphide system, the upward progression from chlorite-magnetite-pyrite (in part of Prince Lyell) to sericite-pyrite, and the presence of an appreciable molybdenum content as well as anomalously high tin, uranium and rare earths in copper ore are all compatible with an intrusion-related system. The abrupt redox front at the Mt. Read/Owen contact is difficult to explain, however, using this model, in which the efficacy of any preexisting fluids would be expected to have been overwhelmed by the magmatically induced convective system.

Second, ore deposition resulted from liberation of metamorphogenic fluids during  $D_1$  deformation. If fluids had a western (Mt. Read) source, generation of the redox front would be nicely explained. However, it is somewhat dubious that a metamorphogenic fluid would be capable of supplying the vast amounts of sulphur in the Mt. Lyell system.

Third, mineralization took place during the Early Ordovician from a volcanogenic system linked to Mt. Read volcanism. Such a system, operating under either subaerial or submarine conditions, would be capable of introducing the required amounts of sulphur, but would require very rapid accumulation of the Owen, Pioneer and Gordon sequences. If  $D_1$  proves to be Middle Devonian in age, then a volcanogenic model would be disqualified.

Fourth, mineralizing fluids were connate brines that accessed the Mt. Lyell area between the Early Ordovician and the Middle Devonian. If Devonian, their mobilization could be attributed to an enhanced regional heat flow caused by granitic intrusion and the early stages of  $D_1$  deformation. However, the most likely source of such fluids would be the Ordovician-Silurian sequence east of Mt. Lyell rather than the Mt. Read Volcanics. As described above, the geometrical array of alteration-mineralization tends to favour a western rather than an eastern source for fluids.

Two-stage ore formation also remains a possibility at Mt. Lyell, although field evidence provides little supporting evidence. Two-stage models would call on a volcanogenic origin for sericite-pyrite alteration (with or without some copper), followed by a metamor-

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ogenic or connate introduction of copper and silver.

The simple remobilization of copper and silver from volcanogenic ores to produce the North Lyell-type bodies seems unlikely. This ill-defined process was recently proposed by Solomon (1984) to explain minor post-Mt. Read mineralization. However, he failed to appreciate the magnitude of the post-Mt. Read event : there was originally as much copper at North Lyell as there was at Prince Lyell. Furthermore, there is no consistent spatial relationship between North Lyell-type bodies and pyrite-chalcopyrite mineralization.

### 3. Implications for exploration

Irrespective of the ultimate origin of the Mt. Lyell ore bodies, spatial and temporal relationships tightly constrain the approach to exploration for further North Lyell-type bodies - the only known type of mineralization at Mt. Lyell that is of interest under current economic conditions.

Copper-silver mineralization of North Lyell type at North Lyell, 12 West, Lyell Tharsis, The Blow and Lyell Comstock abuts, and is at least in part overlain by, bodies of hematite-barite, which at North Lyell and Lyell Comstock are accompanied by large masses of replacement silica. It is thought highly likely that any undiscovered North Lyell-type bodies will prove to be similarly located.

These hematite-barite/copper-silver pairs straddle the Great Lyell fault including, at 12 West, its folded duplication (currently called the "Tharsis fault"). The largest body, at North Lyell, is located where the Great Lyell fault is transgressed by the Haulage unconformity (Fig. 1). At Lyell Blocks, copper-silver mineralization in the Gordon Limestone is shown by the results of DDHS 1101 and 1102 to be underlain, immediately beneath the Haulage unconformity, by a stratabound body of hematite-barite some 50 m thick (Fig. 1).

Although  $D_1$  folding of the Great Lyell fault may have provided sites for ore deposition,  $D_2$  digitations played no such role. In fact some, such as that at the southeastern edge of The blow, were probably induced by the ductility contrast imposed by the presence of preexisting bodies of sulphide and/or silica.

### 4. Recommendations

There is a good possibility that high-grade copper and/or silver ore remains undiscovered along the Great Lyell fault between

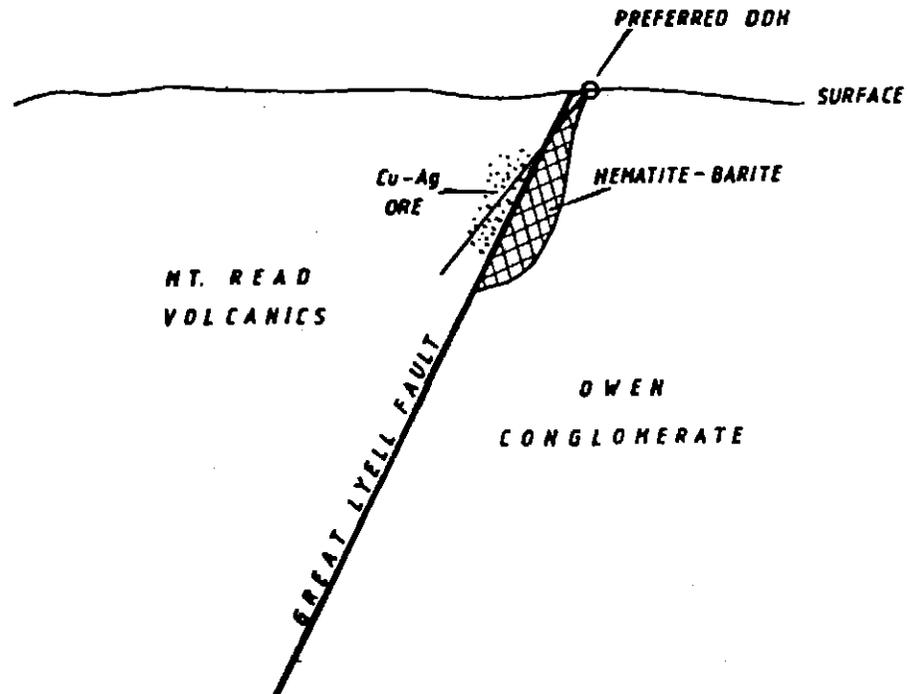
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Gormanston and Lyell Comstock. If discoveries of this type were made, there is a reasonable chance that they could be accessed readily from existing underground openings.

If G.F.E.L. is seriously interested in the search for high-grade copper-silver bodies at Mt. Lyell, then the following programme is suggested. First, all surface and subsurface drill hole locations in the vicinity of the Great Lyell fault and its repetitions should be computerized, along with the recorded positions of the Great Lyell fault and any hematite-barite or mined-out copper-silver bodies. The results of this compilation will precisely locate any undrilled areas large enough to contain ore bodies that abut hematite-barite replacements. At this stage, it would appear that the Gormanston, North Lyell-Lyell Blocks and Lyell Comstock areas offer most promise. The hematite-barite body west of Batchelor's quarry also deserves attention.

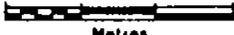
The second stage would involve drill testing of targets selected in this way after assigning them a priority. Drilling should aim to test sulphide-bearing ground immediately adjoining hematite-barite bodies. Drill holes should be sited in order to test the maximum amount of favourable ground rather than to intersect the hematite-barite bodies perpendicularly (Fig. 2). Because each target will require pattern drilling, percussion holes are preferred to diamond holes, given that expected rock and alteration types should be readily recognizable even in cuttings.

Geochemical and geophysical techniques are not required for this proposed exploration programme.



Approx. Vertical  
Scale  
100m

5 cm

GOLD FIELDS EXPLORATION PTY LIMITED	
<b>PROPOSED DRILL SITE TO TEST FOR NORTH LYELL-TYPE ORE BODY</b>	DRAWN BY R.S.
	DRAFTSMAN S.F.
	DATE Mar. 89
	REVISIONS
SCALE 1	 Metres
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	FIG 2

C LATE CENOZOIC FEATURES1. Pre-glacial supergene effects

Late-stage acid leaching was recently distinguished by Bird (1985) as part of an Early Ordovician mineralizing event. The acid leaching promoted disaggregation of even quartz-rich rocks and commonly resulted in rock with a porous, pale-brown appearance. Recognition of numerous open spaces previously occupied by pyrite confirms that the rocks were originally pyritic, although they are essentially free from limonite. The writer interprets these acid-leached rocks as the products of supergene alteration, probably in pre-glacial times. The low pH induced by oxidation of their high original pyrite content inhibited hydrolysis of ferric sulphate, thereby delaying the precipitation of limonite. The patchy distribution of these acid-leached rocks is attributed to glacial erosion, with only the roots of a pre-glacial supergene profile now preserved.

Most of the Gordon Limestone in the immediate vicinity of Mt. Lyell was converted to a puggy black carbonaceous clay by carbonate dissolution. Intermediate products of the conversion are characterized by a brecciated texture. The volume reduction involved in the conversion resulted in obliteration of the D<sub>2</sub> schistosity. Although the limestone is pyrite-free where observed, the black clay carries nodules, discontinuous veinlets and disseminations of pyrite (and traces of sphalerite) of diagenetic appearance. It is tentatively concluded that the pyrite developed subsequent to carbonate dissolution during the concentration of carbonaceous matter in the solution residue. A pre-glacial timing is suggested for the development of the black clay.

Pre-glacial (but late Cenozoic) supergene activity is also believed to have given rise to the generation of native copper (and minor cuprite) and goethite (? after siderite) in the Lyell Blocks-type deposits. Oxidation either accompanied or post-dated the development of black clay from limestone to produce the so-called Copper Clays.

2. Glacial effects

On the basis of the original drilling at Gormanston, Campbell (1969) concluded that the Great Lyell fault there was overlain by a deep synclinal basin of Gordon Limestone. However, with the benefit of the excellent core recovery obtained during the 1984 drilling

013 programme, Bird (1985) realized that this interpretation was inadequate because of the chaotic and fragmental nature of substantial thicknesses of rock. He confronted the problem by proposing the existence of a hydrothermal explosion crater of Early Ordovician age. The recognition of similar fragmental sequences in core from the 1984 holes drilled at Lyell Blocks and McDowell P.A. also prompted his hydrothermal explosion explanation for those two localities.

The writer prefers a periglacial and fluvioglacial origin for the fragmental deposits drilled at Gormanston, Lyell Blocks and McDowell P.A. The intermixture of poorly indurated, well-bedded sandy to clay-rich beds and chaotic fragmental accumulations, including large coherent blocks, with a clay-rich matrix is consistent with a combination of fluvioglacial-outwash and solifluxion processes. Finely banded clays appear to be the products of varved sedimentation in a glacial lake. Wide variations in bedding attitudes are compatible with slumping. At Lyell Blocks, the black clays developed from Gordon Limestone are intermixed with fluvioglacial material, and pockets of sandy and pebbly material have been observed at surface as injections in black clay. Slumping of Gordon-derived black clays under solifluxion conditions explains these relationships. At Gormanston, the glacial deposits occupy a steep-sided depression, at least 170 m deep (Fig. 3). Glacial gouging and/or erosion of outwash channels leading into the Linda valley are believed to have produced this buried paleotopography. The glacial deposits at McDowell P.A. are even thicker, 480 m, and include large landslide blocks (cf., Bird, 1985). A buried glacial channel is therefore indicated along at least parts of the northern side of the Linda valley.

### 3. Implications for exploration

Obviously none of these glacial deposits possesses mineral potential, although large landslide or slumped blocks could contain small tonnages of ore.

Nevertheless, the distribution and thickness of the glacial deposits is important for the planning of drilling programmes. Thick glacial accumulations, like those at Gormanston and McDowell P.A., need to be recognized as such, and avoided by drill holes.

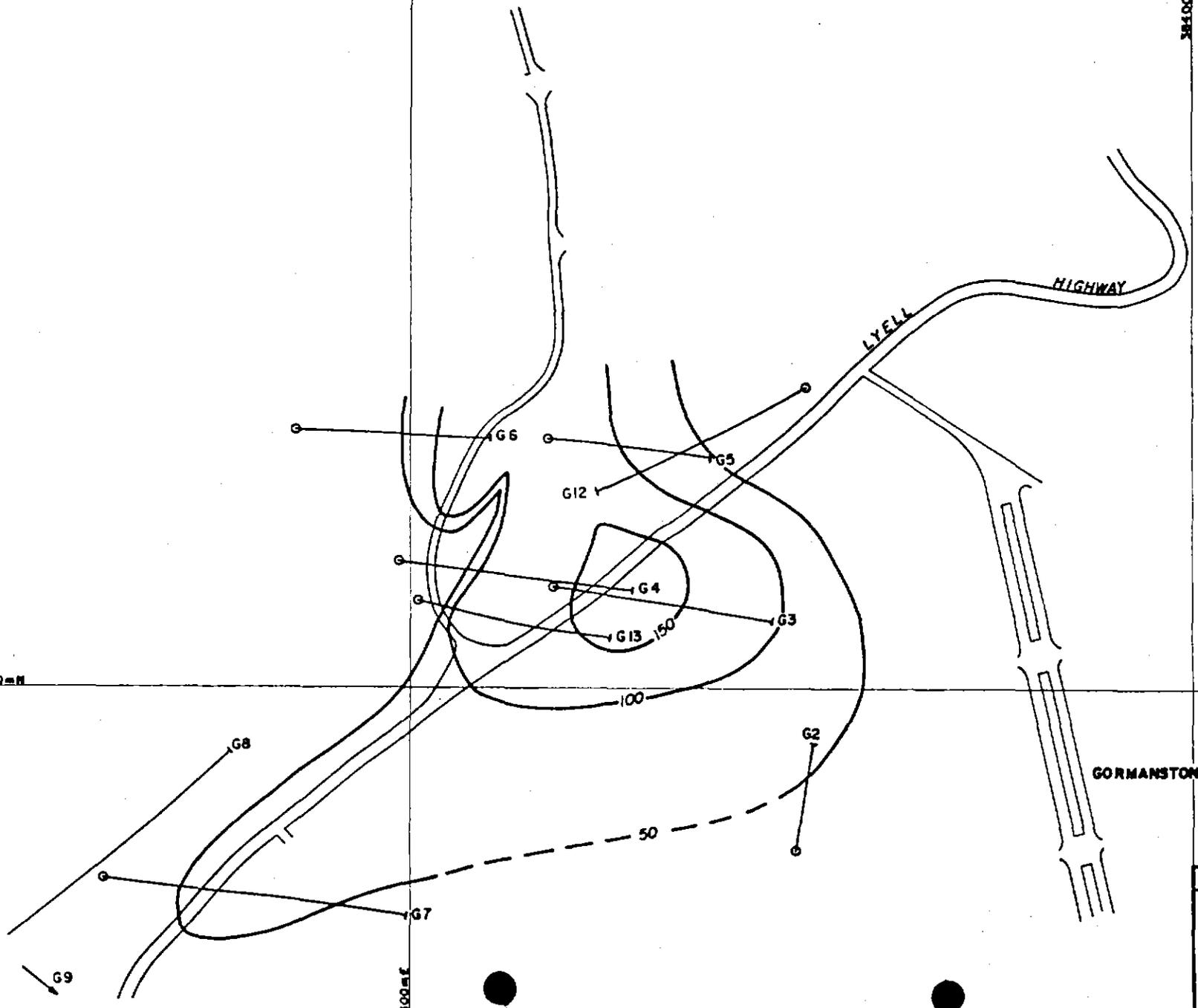
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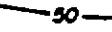
341000m

341500m

341000m

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-  DIAMOND DRILL HOLE
-  50 APPROXIMATE DEPTH OF GLACIAL DEPOSITS (in metres)

5 cm



GOLD FIELDS EXPLORATION PTY LIMITED	
<b>DISTRIBUTION OF GLACIAL DEPOSITS AT GORMANSTON</b>	DRAWN BY R.S.
	DRAFTSMAN S.F.
	DATE
	REVISIONS
FILE NO.	
SCALE 1:2500	FIG 3

D. GOLD EXPLORATION1. Known gold mineralization

Small amounts of gold are present in all the ore types at Mt. Lyell, but none of them would have constituted a gold-only target under current economic conditions, except perhaps for the auriferous gossan that originally capped The Blow. Gold grades in hypogene ore from Prince Lyell- and North Lyell-type bodies are generally < 0.5 gm/tonne but attain about 0.7 gm/tonne at Lyell Comstock. The highest gold grades, averaging 2.7 gm/tonne for 1.56 million tonnes of ore, were reportedly present in the four high-grade copper-silver bodies on the Great Lyell fault along the southern and eastern sides of The blow massive pyrite body. Under current conditions, the gold in these bodies would constitute little more than a "sweetener".

Several reports of small high-grade occurrences of gold in the Mt. Lyell area appear to be present in syn-D<sub>2</sub>, quartz-filled gash fractures. Several anomalously high gold values in the Royal Tharsis orebody correlate with massive quartz, and the highest value obtained to date by G. Arnold (2.6 gm/tonne Au) was obtained from syn-D<sub>2</sub> quartz in the Pioneer Beds. Based on an examination of dump material from Moore's gold mine, on the northern flank of Mt. Owen, it seems likely that gold is present in limonitic cross-fibre quartz bodies in either Pioneer Beds or Owen Conglomerate. It is tempting to suggest that McDowell P.A. was of similar type. Although such metamorphogenic gold may accumulate to form small placers, it is unlikely at Mt. Lyell to constitute a gold-only target of interest to G.F.E.L.

2. Possible gold targets

Given the enigmatic and perhaps unique character of the Mt. Lyell copper mineralization, it is very difficult to suggest the type(s) of gold mineralization that might be present as separate entities within the hydrothermal system. However, it is easy to visualize that a large high-pyrite system that is either intrusion-related, volcanogenic or metamorphogenic in origin could contain gold-only targets. Unless the Mt. Lyell deposits are volcanogenic in origin, gold mineralization of strictly epithermal type is excluded. Ore types emplaced at depths of 2 to 3 km seem more likely, in keeping with the estimated thickness (3-4 km) of overlying rocks at the end of the Silurian.

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Any outcropping gold mineralization at Mt. Lyell would have been located long ago unless the gold grains were very small and therefore unpannable. The most likely host for such "invisible" gold deposits would be a carbonate rock. The Gordon Limestone and limestone beds in the Tyndall Group of the Lyell Comstock area would appear to be the most likely targets. Samples collected by M. Jones from the latter unit contain >1 gm/tonne in places.

However, sampling to date by M. Jones and, to a lesser degree, by G. Arnold and J. Beddows, has not provided evidence for gold-only targets at Mt. Lyell, although it has amply confirmed the wide distribution of gold in the hydrothermal system. These results downgrade but do not negate the possibility of a gold-only target at Mt. Lyell.

### 3. Recommendations

The most effective means of gold exploration at Mt. Lyell is undoubtedly to continue the drill-core and surface rock-chip sampling currently being undertaken by M. Jones and G. Arnold, respectively. If no gold-only targets are revealed by these pragmatic sampling programmes, then little chance exists of their discovery by other means.

G. Arnold's sampling programme is well supported by J. Beddows, but M. Jones requires a minimum of two full-time assistants if the work is to be fully completed in reasonable time. It should be noted that during the sampling of drill core, priority should be given to material obtained from depths of less than 100 m, given that 2 to 3 gm/tonne Au at greater depths is unlikely to be of interest.

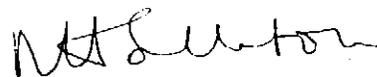
It should be stressed that any gold present in North Lyell-type bodies, as at The Blow, is amenable to discovery using the procedure outlined in B.4, above.

It is not thought worthwhile to employ geophysical or geochemical methods in the search for gold-only targets at Mt. Lyell. From the point of view of geochemistry, it should be stressed that the degree of disturbance in and around the mined area at Mt. Lyell is extreme. Furthermore, most of the drainages that drain the Lyell-Tharsis ridge, including all those on its eastern side, were extensively panned for alluvial gold around the turn of the century; that they are gold-bearing is not therefore in doubt. Gold geochemistry would, however, constitute a valuable exploration tool beyond the mine area.

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28 March, 1985



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