

as inclusions in pyrite or arsenopyrite and, in one case (fig. 6*) in pyrrhotite. Fig. 4* illustrates an extremely minute inclusion of gold in pyrite, while fig. 5* illustrates gold at the margin of a composite grain of pyrite and quartz. A gold particle, .003 x .003mm., has been observed at the margin of an inclusion of pyrrhotite in pyrite, while fig. 6* illustrates a minute inclusion of gold, .003 x .002mm., in an inclusion of pyrrhotite in arsenopyrite.

5. *Calcine Residues.*—Very little sulphide persists in the calcined product, and such particles as can be found occur as inclusions in particles of gangue. No gold has been observed in the prepared section. There occur, however, numerous particles of iron oxide, which are more or less pseudomorphous after the particles of sulphide.

If a particle of pyrite, such as illustrated in fig. 4,* is converted by roasting into a solid particle of iron oxide, it is obvious that the included particle of gold will not be exposed. Unless such particles are disintegrated by the oxidation, the included gold will not be recoverable by cyanidation.

The silver-bearing mineral in the ore has not been recognised.

Fig. 1.*—Drill Core. Gold particles situated on the margin of a particle of pyrrhotite embedded in quartz. Mag. 450. The white squares illustrate the relative size of a 200-mesh I.M.M. Screen.

Fig. 2.*—Gold particle in flotation concentrate, isolated from sulphides. It appears on the surface of the section as two areas isolated in the mounting medium. Other grains in the field are pyrite. Mag. 370.

Fig. 3.*—Gold particles in flotation concentrate. A particle of pyrrhotite is attached to the left side of the gold. Mag. 700.

Fig. 4.*—Particle of pyrite in flotation concentrate containing a minute inclusion of gold. Mag. 500.

Fig. 5.*—Composite grain with dotted outline of quartz and pyrite in the flotation concentrate. Gold is included in the marginal part of pyrite. Mag. 370.

Fig. 6.*—Minute particle of gold in an inclusion of pyrrhotite in arsenopyrite. Flotation concentrates. Mag. 700.

(Signed) FRANK L. STILLWELL.

APPENDIX C.

DESCRIPTION OF SAMPLE.

Approximately 50 lbs. of roasted concentrates were received and analysis of a typical sample of the material gave the following results:—

Analysis.†

		%
Silica	(SiO ₂)	30.60
Alumina	(Al ₂ O ₃)	2.50
Titania	(TiO ₂)	0.11
Manganous oxide	(MnO)	0.10
Lime	(CaO)	4.26
Magnesia	(MgO)	2.24
Soda	(Na ₂ O)	0.08
Potash	(K ₂ O)	0.14
Water < 105° C.	(H ₂ O)	0.61
Water > 105° C.	(H ₂ O)	0.59
Carbon dioxide	(CO ₂)	1.10
Total sulphur	(S)	2.03
Sulphur trioxide	(SO ₃)	4.35
Sulphide sulphur	(S)	0.29
Total iron	(Fe)	36.00
Ferrous oxide	(FeO)	0.71
Total copper	(Cu)	0.37
Ammonia-soluble copper	(Cu)	0.09
Total arsenic	(As)	0.50
Total oxidised arsenic	(As as As ₂ O ₃ , As ₂ O ₅)	0.22
Arsenious oxide	(As ₂ O ₃)	0.17
Cobalt	(Co)	0.022
Zinc	(Zn)	0.45
Carbon	(C)	0.70

Assays.

The average head values of the small samples used in tests were as follows:—

Gold (Au)—91.50 dwts. per short ton of ore.
Silver (Ag)—37.96 dwts. per short ton of ore.

* Figures not available. (R.S.M.)

† Analysis carried out by the Imperial Chemical Industries.

MINERALS PRESENT.

Sulphide.—The material received contains a small amount of sulphides and examination of a flotation concentrate indicated that the principal sulphide was arsenopyrite; pyrite was also identified.

Carbon.—Carbonaceous material is present in the sample.

Gold.—Some free gold is present, mostly as fine grains and flakes. On examination, some of the particles were noted to be partly coated with iron oxides, but in no case was the coating such that difficulty might be expected in extracting this gold.

Silver.—A small amount of silver appears to be associated with gold as bullion, but from the results of tests it is considered that the majority of the silver content bears little or no relation to the gold content.

LANCEFIELD GROUP.

REPORT ON "BERIA MAIN LODGE," G.M.L.
2216T, MT. MARGARET GOLDFIELD.

(K. R. Miles, B.Sc. (Hons.).)

This G.M.L. is situated just south of the Lancefield leases (see plan accompanying Lancefield report). The ore-bodies here consist of three approximately parallel lodes in an area of finely schistose greenstone and talc schist, with lenses of a dense greenstone which weathers to fine clay. This country appears to be in all respects similar to the footwall country of the main Lancefield lode. In marked contrast to the Lancefield lode, however, the lodes and country here strike approximately N. 30°—40° W. and dip 50°—60° N.E. with local variations due to minor folding.

The lode material consists of mineralised schist, which may or may not contain stringers of ferruginous quartz. The distribution of values in the lode appears to be somewhat sporadic, but for the most part the lodes are confined to definite bands in the schist. Here and there the lodes pinch and make, reaching a maximum width of about 14 feet, under the control of a number of minor dragfolds which have a fairly steep northerly pitch.

At the time of inspection (November, 1937), the East Lode was the only one being worked, there being two accessible shafts (shafts A and B). The Middle Lode is no longer accessible, while no work has been done on the West Lode for the last five or six years.

The East Lode has been opened up to 110 feet, V.D., with levels at 70 feet and 102 feet. The tortuous nature of these drives clearly shows the change in strike of the lode due to the dragfolding. Towards the centre of the lode stopeing has been carried on from both the 70ft. and 102ft. levels, and here the lode has an average width of about nine feet. In the upper level the stope rises for 18 feet over a length of 45 feet. The faces at the north-western ends of the 102ft. level and of a small drive at 90 feet, have passed through the nose of a small dragfold which is pitching in the direction N. 50° E. at an angle of 40 degrees. Values are reported to occur in a narrow band about one foot wide on the western side of the drives but not in the faces. To follow the lode the drive should be continued at about 45° west of its present direction.

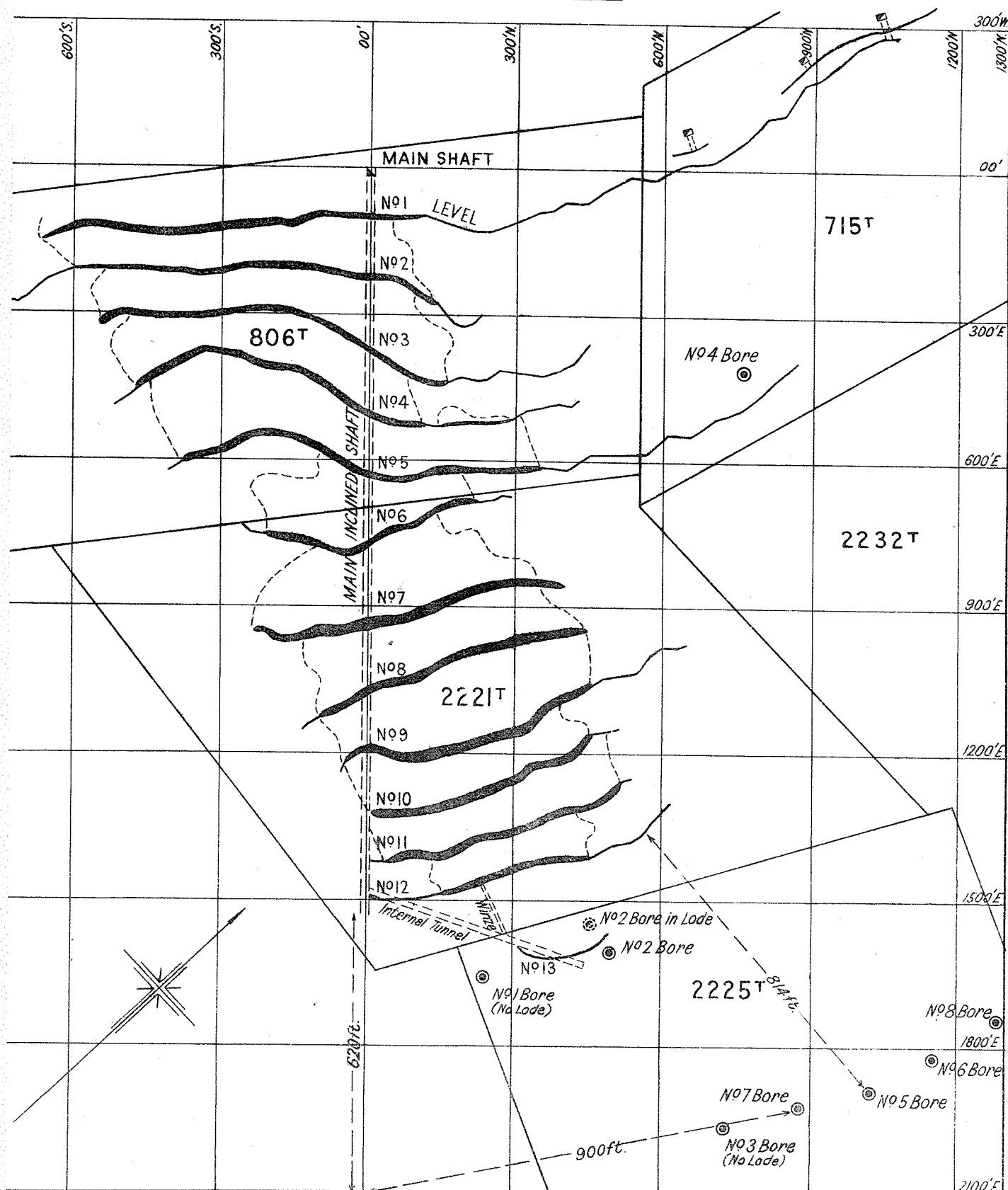
The water level in the East Lode varies from 102 feet at the south-eastern end (shaft B), to 110 feet at the north-western extremity.

Survey data supplied by Mines Dept. Plane Table, Telescopic Alidade traverses & Geology by R.S. Matheson & K.R. Mills, Nov 1937.

PLAN OF LANCEFIELD GOLD MINE

PLATE III

Scale 280 feet to an inch



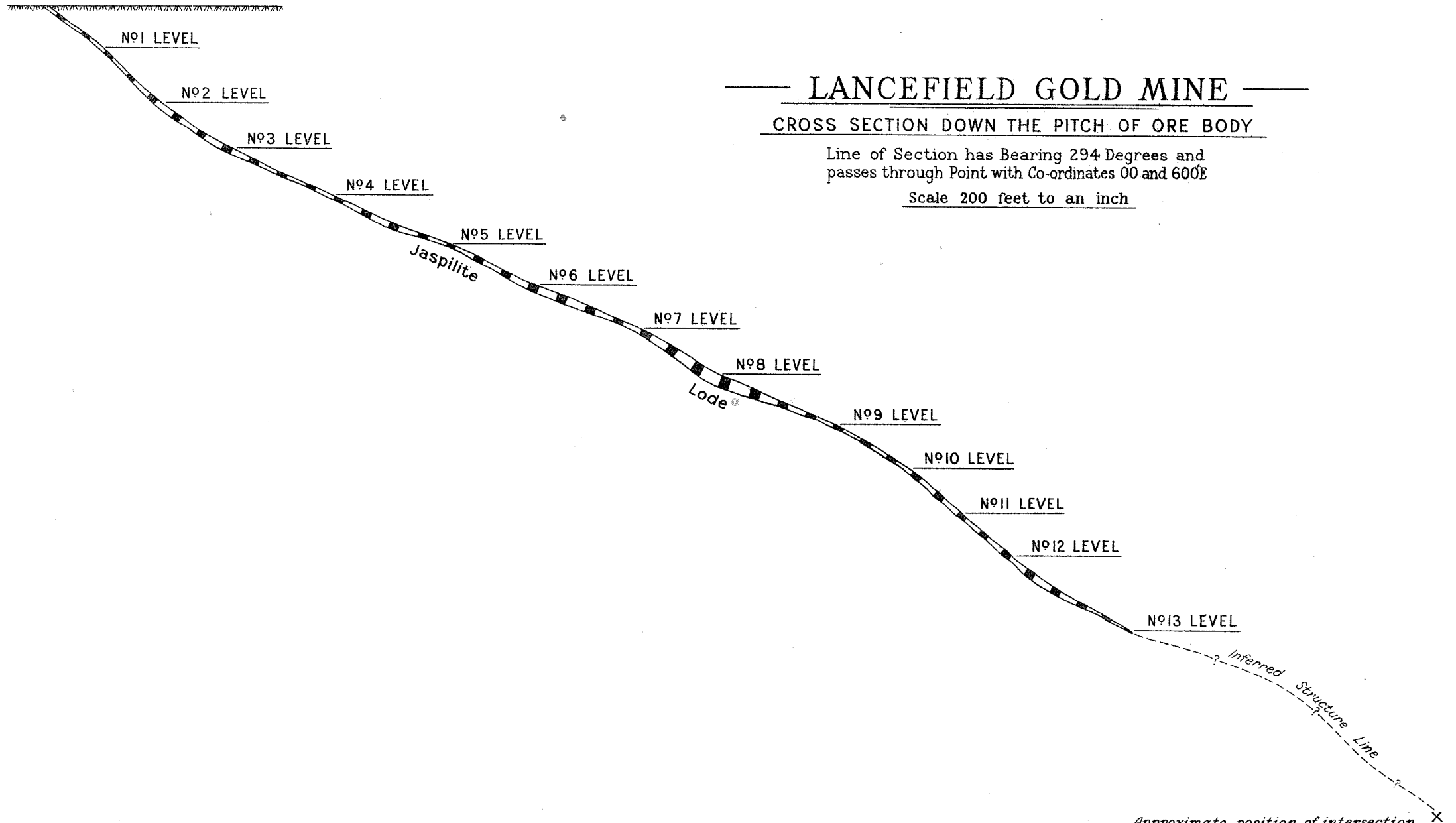
Note:- The sections of the Levels shown in solid black represent the stoped portions

— LANCEFIELD GOLD MINE —

CROSS SECTION DOWN THE PITCH OF ORE BODY

Line of Section has Bearing 294 Degrees and
passes through Point with Co-ordinates 00 and 600E

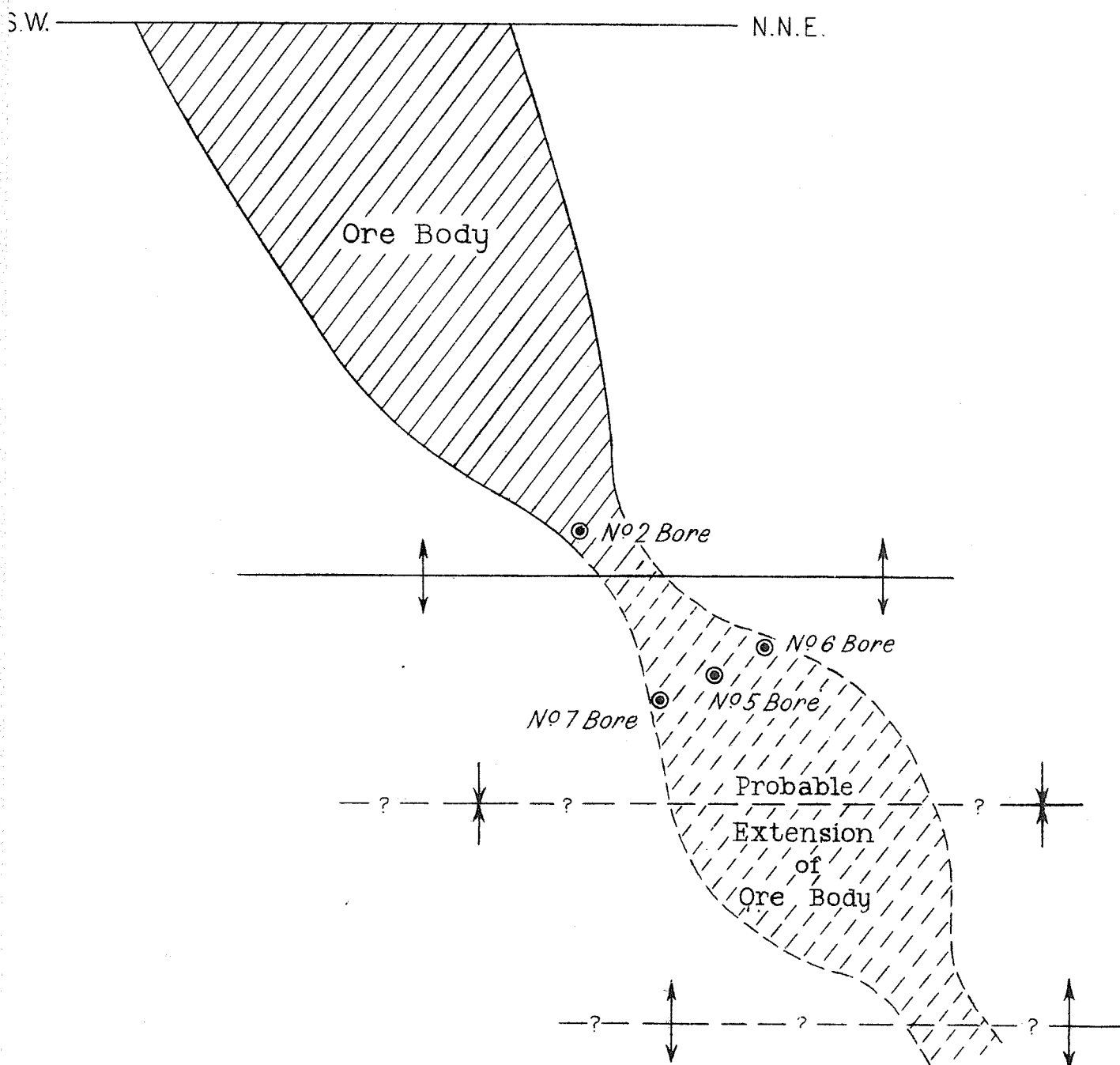
Scale 200 feet to an inch



*Approximate position of intersection
of Bore Nº5 with the Lode.*

DIAGRAMATIC LONGITUDINAL SECTION OF LANCEFIELD ORE BODY

Not to Scale



The West Lode has one accessible shaft, C., 50 feet, V.D., which leads to a short inclined winze opening into two large stopes. The first, which is approximately 60 feet long and 10 to 12 feet wide, was filled with water, which here reaches 70 feet V.D., so that the bottom of the stope could not be examined. It is understood, however, to extend to 100 feet V.D. The second stope which was reported to be of very similar dimensions to the first was inaccessible.

The average value of the lode material recently crushed is reported to have been 6 to 8 dwts. gold per ton. The fact that the values are poor at the surface but steadily improve with depth, with the best values occurring more or less close to the water level, points, I think, rather to the secondary nature of

the lode. Consequently too much optimism as to the possibility of the good values extending into the sulphide zone should not be entertained and will not be justified until further testing has been carried out below water level.

The position of this G.M.L., and the strike and dip of the country in relation to the main Lancefield lode (see plan accompanying Lancefield Report), strongly suggest that it is situated in an extension of the footwall country of the Lancefield lode. Traces of an outcrop of ferruginous quartzites, very similar in appearance to the surface outcrops of the Lancefield lode, occur in the north-western corner of the G.M.L., and it is suggested that these could well bear further investigation and prospecting.
