TR12-27-36

5. EXPLORATORY DIAMOND DRILLING, TASMANIA GOLD MINE, BEACONSFIELD GOLDFIELD

by A. J. Noldart

INTRODUCTION

After extended investigations into auriferous mineralisation in the Beaconsfield Goldfield it was decided to test by diamond drilling the deeps of the 'Tasmania' gold reef, Beaconsfield. A Joy-Sullivan H.D. 30 diamond drilling plant was purchased and drilling commenced on 22 June 1964. One parent hole and two diversions were drilled for a total of 2,609 feet (see fig. 36).

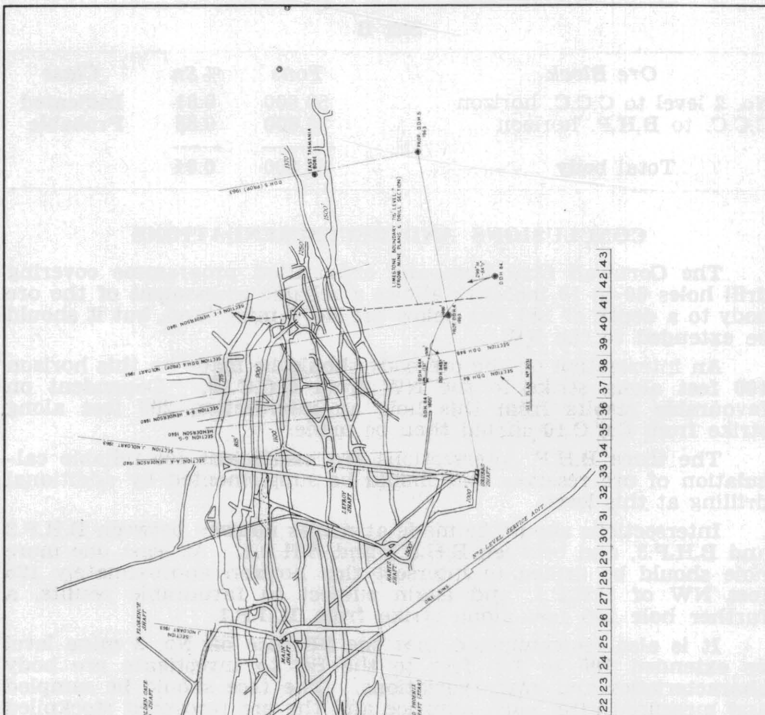

DEPARTMENT OF MINES – TASMANIA
UNDERGROUND PLAN
TASMANIA MINE – BEACONSFIELD
DATE – May 1957
GEOLOGIST –
DRAUGHTSMAN –
SCALE OF FEET
MAP SHEET & No
REVISIONS
FILE No 3026
NOTE – MINE PLAN & GRID AFTER THE TASMANIA G.M. CO. LTD.
PROSPECTING SHAFT
AIR SHAFT
GOLDEN GATE SHAFT
FLORENCE SHAFT
MAIN SHAFT
PHOENIX SHAFT
OLD PHOENIX SHAFT (STAR)
LEFROY SHAFT
HARTS SHAFT
GRUBBS SHAFT
EAST TASMANIA BORE
LIMESTONE BOUNDARY 715' LEVEL (FROM MINE PLANS & DRILL SECTION)
No 2 LEVEL SERVICE ADIT
SEE PLAN No 3031
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43

FIGURE 8

Drilling was completed on 24 April 1967, and further drilling was suspended in favour of possible company activities on the reef. The plant was dismantled and removed for overhaul.

LOCATION AND TARGET

Diamond drill hole No. B4 (D.D.H.B.4) was collared close to the old Daly's United mine shaft at a point 475 feet distant, bearing 45° magnetic from the centre of Grubb's Shaft, Tasmania Goldmine. The hole was commenced at a depressed angle of 85° on a bearing of 299° magnetic.

The proposed target was approximately midway along the projected position of the known ore body at a vertical depth of 2,000 feet below the collar of the Main Shaft, Tasmania Mine, datum 00 feet R.L., and some 550 feet below the deepest (1,500 feet) mine level in the plane of the ore body. Secondary targets were located 400 feet E and W of the first objective.

DRILLING

No information was available on the influence that the bedding plane and cleavage characteristics of the rocks to be penetrated would have on the course of the hole. Although it was anticipated that a marked westerly drift could be expected, a reliable assessment of the intensity could not be made.

The hole was commenced on a bearing approximately parallel to the strike of the country rocks (300° magnetic) and depressed at an angle of 85° to the dip of the bedding planes (55°-65°). Little trouble was anticipated with excessive variation in the inclination of the hole on this course, and it was considered that any excessive westerly azimuth drift could be corrected by normal wedging.

Drill hole surveys at 100 feet intervals during the course of drilling indicated that the inclination variation was not excessive (5° lift from 1-1,000 feet) but with depth a 'corkscrew' effect to the W became more pronounced. Drill hole plots and calculations indicated that an intersection would still be made, although at a higher level than planned, and it was decided to continue the hole as far as possible without mechanical correction.

An intersection was eventually made at a depth of 1,720 feet vertical (R.L. 00 feet, collar Main Shaft, Tasmania Mine) some 260 feet below the bottom level (1,500 feet) of the old workings in the plane of the ore body and approximately midway along the reef.

A short diversion was then effected close to the initial intersection to obtain a check assay of the reef. A second diversion was commenced at a point 1,314 feet down the parent hole; ten wedgings were made using Clappison wedges and the diversion hole was steepened to 86° and turned S to attempt a deeper penetration. The third intersection on the ore body was made at a depth of 1,760 feet vertical, approximately eighty feet distant from D.D.B.H.4 intersection, in the plane of the lode.

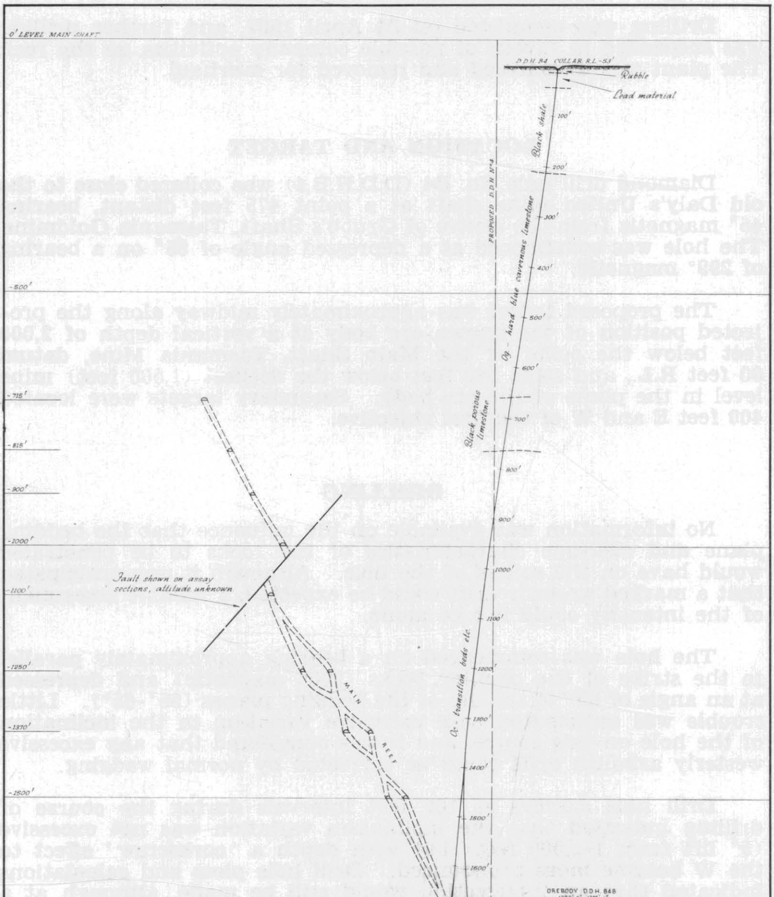

0' LEVEL MAIN SHAFT
D.D.H. B4 COLLAR R.L. -53'
Rubble
Lead material
Black shale
PROPOSED D.D.H. Nº4
Og - hard blue cavernous limestone
Black porous limestone
Oc - transition beds etc.
100'
200'
300'
400'
500'
600'
700'
800'
900'
1000'
1100'
1200'
1300'
1400'
1500'
1600'
1700'
1800'
-500'
-715'
-815'
-900'
-1000'
-1100'
-1250'
-1370'
-1500'
-2000'
Fault shown on assay sections, attitude unknown
MAIN REEF
OREBODY D.D.H. B4A 1681' - 1704'
OREBODY D.D.H. B4B 1723'-6" - 1735'-3"
1745'-3" - 1747'-7"
D.D.H. B4A 1733'
D.D.H. B4 1805'
D.D.H. B4B 1874'
PROPOSED TARGET 1963
DEPARTMENT OF MINES — TASMANIA
CROSS SECTION TASMANIA REEF—LOOKING N 33°E (APPROX.)
DATE May 1967
SCALE OF FEET
0 50 100 150
GEOLOGIST J. Noldart
DRAUGHTSMAN P. Nankivell
MAP SHEET & Nº B'field 30
FILE Nº 3031
REVISIONS

FIGURE 9

GEOLOGY

Description of surface and underground geology and mineralisation is given in previous reports and need not be repeated here. Brief summaries of the geological information from the drilling is given in the following core logs.

D.D.H.B.4

DEPTH		*Description*
From	*To*	
feet	*feet*	
0	13	Rubble and old mine talus.
13	36	Clay, sand and gravel representing the Eastern lip of the Beaconsfield deep lead.
36	213	Black carbonaceous shale.
213	660	Hard blue cavernous Gordon Limestone, Ordovician age.
660	764	Interbedded blue limestone and black, porous carbonate rock.
764	1,689	Transition beds comprising grey massive lime-rich sandstone, impure limestone, siltstone and occasional horizons of hematite-stained dark brown to pink limestone containing numerous crinoid fragments. Below 1,200 feet the beds have progressively less carbonate content and more silica, grading to sandstone and quartzite of light to medium grey colour.
1,689	1,708	ORE ZONE.
1,708	1,716	Medium grey quartzite.
1,716	1,753	Dark grey to black quartzite containing minor grit and pebble bands.
1,753	1,805	Predominantly light coloured pebble conglomerate of the Cabbage Tree Conglomerate type.
		END OF HOLE.

D.D.H.B.4 A (First Diversion)

DEPTH		*Description*
From	*To*	
feet	*feet*	
1,490	1,681	Mainly light to medium grey quartzite and sandstone.
1,681	1,704½	ORE ZONE
1,704½	1,714	Quartzite as above.
1,714	1,733	Dark grey to black quartzite.
		END OF HOLE.

D.D.H.B.4 B (Second Diversion)

Depth From	Depth To	Description
feet	*feet*	
1,314	1,660	No core due mainly to intensive wedging.
1,660	1,723½	Medium grey quartzite—Lower Ordovician Orthid, Tritoechia(?) *careyi* at 1,701 feet.
1,723½	1,747½	ORE ZONE.
1,747½	1,787	Medium grey quartzite.
1,787	1,852	Dark grey to black quartzite.
1,852	1,874	Predominantly light coloured pebble conglomerate of the Cabbage Tree Conglomerate type.
		END OF HOLE.

THE ORE BODY

The ore body in each intersection is composed of a quartz reef, impregnated with sulphides in variable concentrations and containing visible gold in some sections. Sulphide mineralisation includes pyrite, chalcopyrite, galena, sphalerite and arsenopyrite. Tetrahedrite has been recorded from the ore body by previous workers but was not seen in the core. The main gangue is siderite.

Detailed logs of the ore intersections are given below. Ore body recovery was 100% in all intersections.

D.D.H.B.4

Depth From		Depth To		Description
feet	*in.*	*feet*	*in.*	
1,689	0	1,693	0	Quartz/siderite reef heavily impregnated with sulphides—progressively less sulphide.
1,693	0	1,695	9	As above—low sulphide content.
1,695	9	1,697	9	Quartz/siderite/sulphide as above.
1,697	9	1,698	9	Quartz with coarse flecks of gold and minor sulphides.
1,698	9	1,702	0	Quartz/siderite with moderate sulphide content—leached over last six inches.
1,702	0	1,704	0	Quartz with coarse flecks of gold and minor sulphides.
1,704	0	1,705	9	Slightly mineralised grey quartzite.
1,702	0	1,704	0	Quartz with coarse fleck of gold and minor sulphides.
1,706	11	1,707	8	Mineralised chert.
				END OF ORE ZONE.

D.D.H.B.4 A

DEPTH From		DEPTH To		*Description*
feet	*in.*	*feet*	*in.*	
1,680	10	1,683	5	Quartz/siderite/sulphide — sulphide prominent.
1,683	5	1,688	2	Quartz with small flecks of gold.
1,688	2	1,688	10	Quartz—strongly leached and honeycombed.
1,688	10	1,690	10	Quartz with small flecks of gold—minor sulphide.
1,690	10	1,696	5	Quartz/siderite reef with moderate sulphides.
1,696	5	1,702	7	Quartz with minor sulphides and occasional small flecks of gold—some assimilated country rock.
				END OF ORE ZONE.

D.D.H.B.4 B

DEPTH From		DEPTH To		*Description*
feet	*in.*	*feet*	*in.*	
1,723	6	1,727	2	Quartz/siderite reef with moderate sulphides and occasional fine flecks of gold.
1,727	2	1,730	0	As above but no visible gold.
1,730	0	1,731	2	Siderite vein along core.
1,731	2	1,731	8	Quartz/carbonate with massive sulphides.
1,731	8	1,735	3	Quartz/siderite with moderate sulphides and occasional fine flecks of gold.
1,735	3	1,744	6	Gangue—massive siderite with occasional blebs of pyrite and quartz.
1,744	6	1,745	3	Leached massive siderite.
1,745	3	1,747	1	Quartz/carbonate with moderate sulphides.
1,747	1	1,747	7	Quartz/carbonate with massive sulphides—quartz minor.
				END OF ORE ZONE.

ASSAY RESULTS

Assay sections and values are given below.

D.D.H.B.4

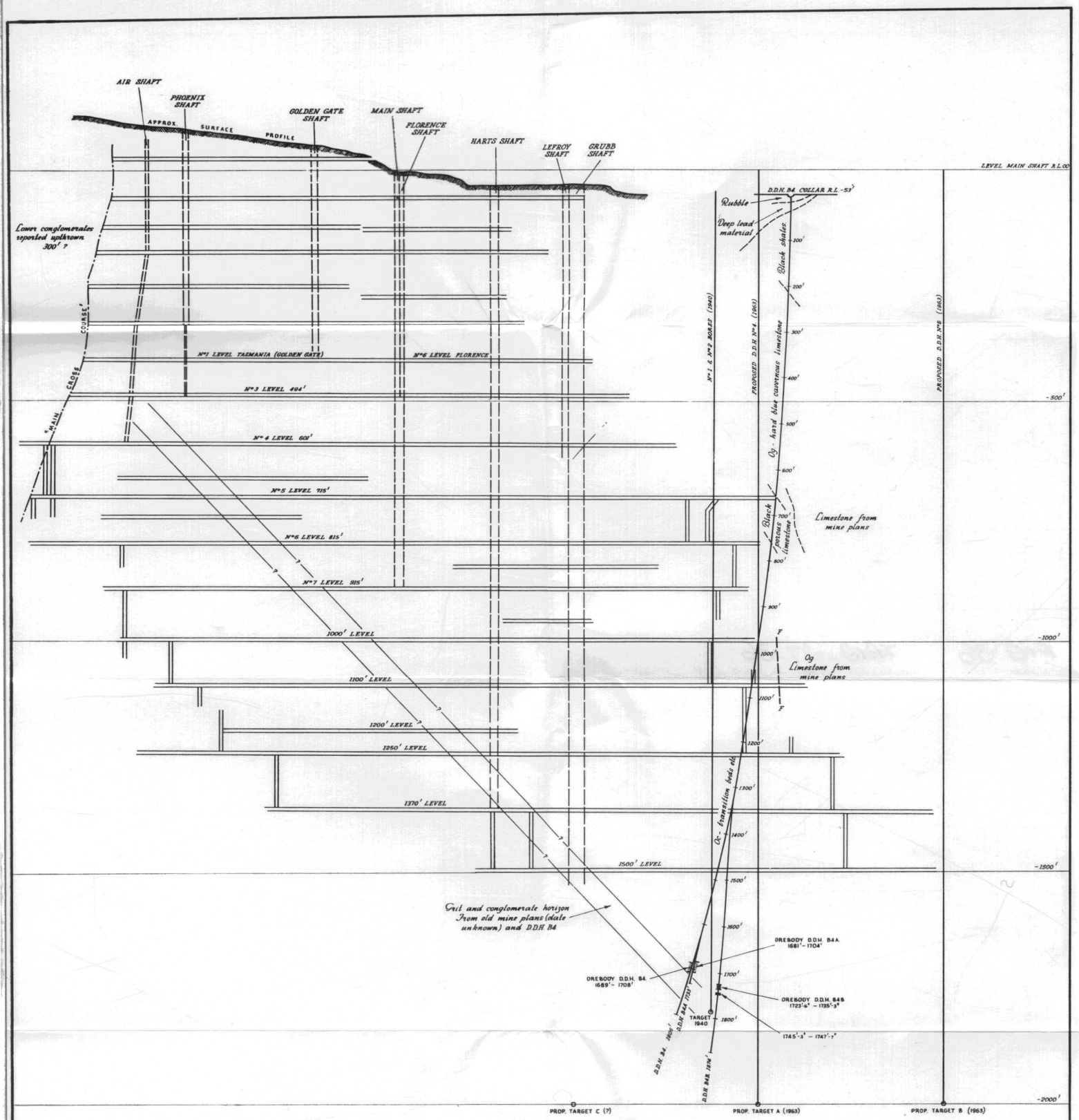
Depth From feet	in.	To feet	in.	Au dwts.	Ag dwts.	Cu %	As %	Pb %	Zn %	Mn %	S %
1,689	0	1,691	0	23.0							
1,691	0	1,693	0	10.7							
1,693	0	1,695	0	1.7							
1,695	0	1,697	0	7.5							
1,697	0	1,699	6	18.3							
1,699	6	1,702	0	35.3							
1,702	0	1,704	0	591.0							
1,704	0	1,706	0	2.0							
1,706	0	1,707	8	19.1							
Composite											
1,689	0	1,707	8	60.20	4.7	1.06	1.49	0.10	0.80	0.49	7.5

D.D.H.B.4 A

Depth From feet	in.	To feet	in.	Au dwts.	Ag dwts.	Cu %	As %	Pb %	Zn %	Mn %	S %
1,680	10	1,683	10	15.4							
1,683	10	1,686	10	71.0							
1,686	10	1,689	10	75.0							
1,689	10	1,692	10	45.0							
1,692	10	1,695	10	11.0							
1,695	10	1,698	10	79.2							
1,698	10	1,701	10	16.0							
1,701	10	1,704	6	34.2							
Composite											
1,680	10	1,704	6	42.1	6.6	0.91	0.43	0.03	0.16	0.36	4.9

D.D.H.B.4 B

Depth From feet	in.	To feet	in.	Au dwts.	Ag dwts.	Cu %	As %	Pb %	Zn %	Mn %	S %
1,723	6	1,726	6	21.7							
1,726	6	1,729	6	17.4							
1,729	6	1,732	6	41.8							
1,732	6	1,735	3	39.8							
1,735	3	1,739	3	0.8							
1,739	3	1,743	3	1.2							
1,743	3	1,745	3	3.4							
1,745	3	1,747	7	16.4							
Composite											
1,723	6	1,735	3	26.8	11.0	1.10	0.05	0.10	0.03	0.39	3.58



DEPARTMENT OF MINES — TASMANIA

LONGITUDINAL PROJECTION TASMANIA GOLD MINE

DATE May 1967	SCALE OF FEET 0 100 200 300
GEOLOGIST J. Noldart	
DRAUGHTSMAN P. Nankivell	MAP SHEET & N° Beaconsfield 30
FILE N° 3030	REVISIONS

5 cm

FIGURE 36

TR12_27_36

CONCLUSIONS

Exploratory work to date indicates that the character of the Tasmania reef has not altered with depth but is constant throughout, the only apparent variable being the gold content. Assay sections of the mine indicate sporadic gold values throughout but consistently higher towards the central and E sections of the ore body.

Previous estimates of the average width of the reef vary from 5 to 8 feet with probable average of 5 to 6 feet. The apparent widening of the lode where intersected in the current programme is probably due to the intersection coinciding with the splitting of the lode as indicated in the mine plans on the 1,250, 1,370 and 1,500 feet levels. There is an inclusion of country rock, in the D.D.H.B.4 intersection suggesting a strong hangingwall lode and a weaker footwall lode as indicated by old assay sections, and a similar structure occurs in the D.D.H.4 B intersection with massive gangue material replacing country rock.

The pebble conglomerate beds intersected in the footwall of the ore body in each intersection appear to be extensions of the 'auriferous conglomerate' (Twelvetrees, 1903) reported from the 600 and 718 feet levels in the mine, and, as the western limits of the ore body appear to be lithologically controlled by the 'lower' conglomerate and black sandstone, the occurrence of these beds suggests no great change in the length of the ore body at this depth as would be the case if faulting or flattening of the strata had occurred.

Where intersected the sulphide content of the ore body is not a major cost item, as has been suggested by earlier investigators, indeed the copper values obtained, if consistent throughout, would be a considerable factor in mining economics.

RECOMMENDATIONS

Deeper exploration is necessary both to prove continuity of ore body length and grade and to determine controlling factors of the ore body in the deeper levels.

Further drilling should be carried out between the 2,000 feet and 3,000 feet levels as a primary programme with extended drilling possibly to the 4,000 feet level as a follow-up. With drill hole deviation information now available, careful planning would permit several widely-spaced intersections from each parent hole.

References

ANON, 1898.—The Tasmania Mine, Beaconsfield, in Tasmania and its Mineral Wealth. *Special Edition, Aust. Min.*

* CUNDY, W. H. and FAWCETT.—Tasmania Mine, Beaconsfield. *Rep. Dep. Min. Tasm.* (unpublished).

GOULD, C., 1866.—Geological Surveyors Report of the Country near Ilfracombe in West Tamar District. *Tasm. House of Assembly Pap.* 76 (for 1866).

GREEN, D. H., 1959.—Geology of the Beaconsfield District including the Andersons Creek Ultrabasic Complex. *Rec. Q. Vict. Mus., Launceston.*

* HILLS, D. H., 1959.—Geological Factors Controlling the Future of the Tasmania Mine. *Rep. Dep. Min. Tasm.* (unpublished).

* HUDSON, J. O., 1923.—Tasmania Mine. *Rep. Dep. Min. Tasm.* (unpublished).

* HUGHES, T. D., 1953.—The Beaconsfield and Lefroy Goldfields, *in* Geology of Australian Ore Deposits, *5th Emp. Min. Metall. Congr.* 1, pp. 1233-1236.

* MONTGOMERY, A., 1891.—Report on the Geological Structure of the Beaconsfield Goldfield. *Ann. Rep. Secy. Min. Tasm.*, for 1890-91.

* NOLDART, A. J., 1964.—Notes on Auriferous Deposits, Beaconsfield Goldfield. *Tech. Rep. Dep. Min. Tasm.*, 8, 11-22.

* ———————— and THREADER, V. M., 1965.—Gold Deposits of Tasmania, *in* Geology of Tasmanian Ore Deposits. *8th Commonw. Min. Metall. Congr.* 1, pp. 518-521.

* NYE, P. B., 1924.—South Lode in Tasmania Mine. *Rep. Dep Min. Tasm.* (unpublished).

THUREAU, G., 1883.—Report on the Future Prospects as regards Productiveness and Permanency of the Beaconsfield and Salisbury Mining District. *Tasm. House of Assembly Pap.* 51 (for 1883), *Tasm. Legislative Council Pap.* 60 (for 1883).

TWELVETREES, W. H., 1902.—Report on Deep Sinking at the Moonlight-Cum-Wonder Gold Mine, Beaconsfield. *Ann. Rep. Secy. Min. Tasm.*, 1901-02.

* ———————— 1903(a).—Report on Mineral Resources of District of Beaconsfield and Salisbury. *Dep. Min. Tasm. Publ.*

———————— 1903(b).—The Present Position of the Tasmania Mine. *Dep. Min. Tasm. Publ.*

NOTE.—The principal reports are marked *.