

# DRILLING RECORD

SCALED

AREA: <b>PIEMAN INVESTIGATION</b>		POSITION	CO-ORDINATES: E 369 Kyps 0537'	N 856 Kyps. 1278'	HOLE No.
LOCATION: <b>Sophia Tunnel</b>			ON LINE:	BEARING:	AT CH.
GEOLOGICAL PLAN: SURVEY PLAN: <b>369855 3/2</b>		LEVEL	AT STN:	BEARING:	DIST:
DATES (a) DRILLED: <b>10-4-63</b> (b) WATER TABLE: <b>18-7-63</b>			SURFACE:	COLLAR:	WATER TABLE:
METHOD: <b>D. D.</b> DIAMETER: <b>N</b>		INCL.	<b>7/A</b>		SHEET
SITE REMARKS: <b>Talus slope Sophia end Redrill of D.H.6620 which was abandoned.</b>			HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS	
										W-Weathered	Ch-Chlorite
0'							Green + Green				Talus
5'											White pink quartzite fragments.
10'											White brown talus, limonite in joints, with quartz occasionally.
15'											White grey talus, soft friable. Core loss due to poor ground conditions.
20'											Core in form of grey slurry or mud. Occasional presence of limonite.
25'											Friable talus, grey, white, yellow in places, (limonite)
30'											
35'							Brown				
40'							Green				
45'							Grey				
50'							Brown				
55'							Grey				
60'											
65'											Mainly Sound Rock
70'											Hard siliceous conglomerate + quartzite
75'											Owen Formation
80'											
85'											At 82'. 7" of quartz with chlorite in vughs. Analysis of sulphides by Rickards Mather 14/6/67.
90'											← TS 1072 (Mineralized mica quartzite)
95'											Thin soft zones. Brownwater return due to weathered joints.
100'											At 98' Seismic Velocity 16,400 ft/sec

25.2

29.9

# DRILLING RECORD

SCALED

AREA: <b>PIEMAN INVESTIGATION</b>		CO-ORDINATES: E: 369 KYDS. 0537' N: 886 KYDS. 1278'		HOLE No.
LOCATION: <b>Sophia Tunnel</b>		ON LINE:	BEARING:	AT CH.
GEOLOGICAL PLAN: SURVEY PLAN: 369855 2/3		AT STN:	BEARING:	DIST:
DATES (a) DRILLED: 10.4.63 (b) WATER TABLE: 18.7.63		SURFACE:	COLLAR:	WATER TABLE:
METHOD: <b>D.D.</b> DIAMETER: <b>N.</b>		714		
SITE REMARKS: <i>Talus slope Sophia end. Redrill of D.H. 6620 which was abandoned.</i>		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
		<i>10°/20' at 0'</i>	<i>10°20' at 0'</i>	<i>228° 30' T 216° 30' H</i>
SHEET 2 OF 10 SHEETS				

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS		
										W- Weathered	Q- Quartz	Py. Pyrite
										C- Carbonate		Sl- Slickensides
										O- Open joints		
10'0"												
10'5"												
11'0"												
11'5"												
12'0"												
12'5"												
13'0"												
13'5"												
14'0"												
14'5"												
15'0"												
15'5"												
16'0"												
16'5"												
17'0"												
17'5"												
18'0"												
18'5"												
19'0"												
19'5"												
20'0"												

*Analysis of Sulphides by Rickards Mather 14/6/67*

122'8" Slaty bed (0.3" thick)  $\angle 90^\circ$  to core with slickensides  
 124'0" Slaty beds as above.

Mainly Sound Rock  
 Hard siliceous conglomerate + quartzite.  
 Owen Formation

141'3" Thin soft white powdery layer  $\angle 90^\circ$

154'3" Soft crumbly rock for 1"

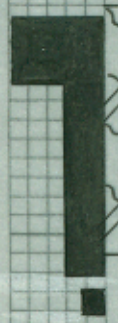
Driller reports hole caving. Core Loss attributed to broken & weathered rock.  
 Core shows rock fragments & sands.  
 Rock appears to have been soft & crumbly

175'2" - 175'8" Soft cream argillite, broken.

1" - 12"

1" - 6"

NX



unable to distinguish

Grey Yellow-Brown

Brown

Grey

Grey

Grey

Grey

Grey

Grey

Grey

19ppm

29ppm

19ppm

19ppm

19ppm

19ppm

19ppm

19ppm

19ppm

53-4  
53-5

# DRILLING RECORD

SCALED

AREA: <b>PIEMAN INVESTIGATIONS</b>	CO-ORDINATES:	E: 869 KYDS. 0637 <sup>1</sup>	N: 856 KYDS. 1278 <sup>1</sup>	HOLE No. <b>6627</b>
LOCATION: <b>SOPHIA TUNNEL</b>	ON LINE:	BEARING:	AT CH.	FILE No.
GEOLOGICAL PLAN: SURVEY PLAN: <b>369855 2/3</b>	AT STN:	BEARING:	DIST:	
DATES (a) DRILLED: <b>10-4-63</b> (b) WATER TABLE: <b>18-7-63</b>	SURFACE:	COLLAR:	WATER TABLE:	SHEET <b>3</b> OF <b>10</b> SHEETS
METHOD: <b>D.O.</b> DIAMETER: <b>N</b>		<b>71A</b>		
SITE REMARKS: <i>Talus slope at Sophia end. Redrill of D.H. 6620 which was abandoned</i>	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
	✓/HOR./INC.	<b>0° + 20' at 0'</b>	<b>229° 30' T 216° 30' M at 0'</b>	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS		
										W- Weathered	Q- Quartz	O- Open
										Sl- Slickensides	Py- Pyrite	Ch- Chlorite
20.0												
20.5		1" - 6"				6.5						
21.0						4.0						
21.5						3						
22.0						1.4						Quartz seam pyrite 1'
22.5		1" - 12"				3.5						Mainly Sound Rock Hard siliceous conglomerate + quartzite Owen Formation
23.0						1 1/2 - 1/4						Soft slickensided joint 1/2" - 3/4" wide, chlorite.
23.5												Coarser grained quartzite (3-4mm).
24.0												
24.5		1"										Fine pink quartz sand & fragments up to 1"
25.0												
25.5												Coarse grained quartzite 10-12mm. Brown weathered joints broken black filling -? Wad. Minor leaching, white green.
26.0						4						Faint Haematite. Broken Haematite bands. 2" - 1/10"
26.5						3						Haematite bands minor pyrite. Coarser grained quartzite (5mm. quartz)
27.0												
27.5		1/2" - 9"				2						Leached cavities, Haematite, ? black wad. MnO2
28.0						4.0						
28.5												
29.0												Boundary between Owen Formation and Granitic Types at 290'6". Some of the broken rock due in part at least to drilling.
29.5		1" - 27"				3.0						Mainly Sound Rock, Granitic Types Intervening rock between joints weathered from contact to 293'.
30.0						2.5						

88.5  
89.3

# DRILLING RECORD

SCALED

AREA: <i>PIEMAN INVESTIGATIONS</i>	POSITION	CO-ORDINATES: E. 369 4405.0637'	N. 856 4405.1278'	HOLE No. <b>6627</b>
LOCATION: <i>SOPHIA TUNNEL</i>		ON LINE: BEARING: AT CH:		
GEOLOGICAL PLAN: SURVEY PLAN: <i>369855 2/3</i>	LEVEL	AT STN: BEARING: DIST:	FILE No.	
DATES (a) DRILLED: <i>10-4-63</i> <i>18-7-63</i> (b) WATER TABLE:		SURFACE COLLAR WATER TABLE		
METHOD: <i>D.D.</i> DIAMETER: <i>N</i>	INCL.	<i>714</i>		SHEET <b>4</b> OF <b>10</b> SHEETS
SITE REMARKS: <i>Talus slope Sophia end.</i> <i>Re-drill of D.H. 6620 which was abandoned</i>		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION		
		<i>VERT/HOR/INC</i>	<i>+ 3° 18' at 400'</i>	<i>214° 30' M at 400'</i>

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	W-Weathered C-Carbonate Py-Pyrite	Q-Quartz REMARKS O-Open	Ch-Chlorite Sl-Slickensides
30'0"												
30'5"												
31'0"												
31'5"												
32'0"												
32'5"												
33'0"												
33'5"												
34'0"												
34'5"												
35'0"												
35'5"												
36'0"												
36'5"												
37'0"												
37'5"												
38'0"												
38'5"												
39'0"												
39'5"												
40'0"												

100.6

119.2

At 330' 19" Core removed to I.M. Dougall National University for age determination.

Mainly Sound Rock, Granitic Types.

Joints mainly chlorite slickensides.

Soft & leached cavities in part. Minor pyrite 8<sup>1</sup>/<sub>4</sub>".

Minor leached cavities.

Grey Green Slickensides.

Minor leached cavities & pyrite. & ? Sphalerite Dark green min. seam. Friable in part.

Haematite band. leached cavities.

At 391' Shaley zone 0.3" thick. Slickensides & Pyrite.

Leached cavities.

# DRILLING RECORD

SCALED

AREA: <b>PIEMAN INVESTIGATIONS</b>	POSITION	CO-ORDINATES: E: <b>369 KYDS. 0537<sup>1</sup></b>	N: <b>856 KYDS. 1278<sup>1</sup></b>	HOLE No. <b>6627</b>	
LOCATION: <b>SOPHIA TUNNEL</b>		ON LINE: _____	BEARING: _____	AT CH: _____	FILE No. _____
GEOLOGICAL PLAN: _____ SURVEY PLAN: <b>369855 2/3</b>		AT STN: _____	BEARING: _____	DIST: _____	
DATES (a) DRILLED: <b>10-4-63</b> (b) WATER TABLE: <b>18-7-63</b>	LEVEL	SURFACE: _____	COLLAR: _____	WATER TABLE: _____	
METHOD: <b>D.D.</b> DIAMETER: <b>N</b>		714			
SITE REMARKS: <b>Talus slope Sophia end. Redrill of D.H.6620 which was abandoned</b>	INCL.	HOLE DRILLED _____	ANGLE FROM HORIZONTAL _____	DIRECTION _____	
		<del>_____</del> / HOR. / INC. _____	<b>3° 18' at 400'</b>	<b>214° 30' at 400'</b>	

SHEET  
5  
OF  
10  
SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
40'										
40 5'										
41'					+					Ferromagnesian minerals slightly chloritised in part.
41 5'										412'6" 12" for Dating - Mines Dept. 12-12-75 418'-438 1/2" Ferromagnesian minerals chloritised in part. Rock shows slight weathering between joints. Soft & crumbly in part.
42'					+					
42 5'										
43'					+					
43 5'					-					
44'					+					
44 5'										
45'										
45 5'					+					Mainly Sound Rock, Granitic Types.
46'					+					
46 5'										
47'					+					
47 5'										
48'					+					Leached Cavities.
48 5'										
49'					+					Ferromagnesian minerals in part are darker in colour and appear to have been chloritised.
49 5'										
50'										

125.7  
127.4  
133.5

1" - 12"

2" - 20"

1" - 24"

809 P.P.M.

969 P.P.M.

1209 P.P.M.

Grey  
 2.5  
 2.0  
 3.5  
 4.0  
 4.0  
 5.5  
 2.0  
 1.5  
 1.8  
 1.6  
 3.0

chloritised

# DRILLING RECORD

SCALED

AREA: <b>PIEMAN INVESTIGATIONS</b>	CO-ORDINATES:	E 363 KYDS. 0637'	N 856 KYDS. 1278'	HOLE No.
LOCATION: <b>SOPHIA TUNNEL</b>	ON LINE:	BEARING:	AT CH.	6627
GEOLOGICAL PLAN: SURVEY PLAN: <b>369855 2/3</b>	AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: <b>10-4-63</b> (b) WATER TABLE: <b>18-7-63</b>	SURFACE: <b>714</b>	COLLAR:	WATER TABLE:	SHEET No.
METHOD: <b>D.D.</b> DIAMETER: <b>N</b>	<b>714</b>			SHEET 6 OF 10 SHEETS
SITE REMARKS: <b>Talus slope Sophia end.</b> <b>Re-drill of D.H. 6620 which was abandoned.</b>	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
	<del>---T/HOR/INC</del>	<b>+3°18' at 400'</b>	<b>214°30'M at 400'</b>	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	Ch - Chlorite	Py - Pyrite	Q - Quartz
										Sl - Slickensides	REMARKS	
										C - Carbonate	O - Open	Ch - Chlorite
50'0"												
50'5"		1" - 12"										
51'0"												
51'5"		1" - 12"										
52'0"												
52'5"												
53'0"												
53'5"		1" - 20"										
54'0"												
54'5"												
55'0"												
55'5"		1" - 12"										
56'0"												
56'5"												
57'0"												
57'5"		1" - 20"										
58'0"												
58'5"												
59'0"												
59'5"		1" - 12"										
60'0"												
60'5"												
61'0"												
61'5"												
62'0"												
62'5"												
63'0"												
63'5"												
64'0"												
64'5"												
65'0"												
65'5"												
66'0"												
66'5"												
67'0"												
67'5"												
68'0"												
68'5"												
69'0"												
69'5"												
70'0"												
70'5"												
71'0"												
71'5"												
72'0"												
72'5"												
73'0"												
73'5"												
74'0"												
74'5"												
75'0"												
75'5"												
76'0"												
76'5"												
77'0"												
77'5"												
78'0"												
78'5"												
79'0"												
79'5"												
80'0"												
80'5"												
81'0"												
81'5"												
82'0"												
82'5"												
83'0"												
83'5"												
84'0"												
84'5"												
85'0"												
85'5"												
86'0"												
86'5"												
87'0"												
87'5"												
88'0"												
88'5"												
89'0"												
89'5"												
90'0"												
90'5"												
91'0"												
91'5"												
92'0"												
92'5"												
93'0"												
93'5"												
94'0"												
94'5"												
95'0"												
95'5"												
96'0"												
96'5"												
97'0"												
97'5"												
98'0"												
98'5"												
99'0"												
99'5"												
100'0"												

154.7

161.5

168.8

175.4

120gpm

Green Grey

Ferromagnesian minerals chloritised in part.  
At 507'6" Seismic Velocity 19,600 ft/sec.  
Leached cavities.

Green Grey.

Leached cavities in part.

Minor sphalerite  
Broken & slickensided 3"-1 1/2", 0.1" Q. Veins.

530' 24" to Mines Dept. for Dating 12-12-75

554' 24" to Mines Dept. for Dating 12-12-75

Rock soft & crumbly due to chloritisation & weathering

Leached cavities.  
Leached Cavities.

Soft crumbly rock along joints due to chloritisation & weathering.

588'6" 24" to Mines Dept. for Dating 12-12-75  
(Sample not used)

# DRILLING RECORD

SCALED

AREA: <b>DIEMAN INVESTIGATIONS</b>	CO-ORDINATES:	E: 869 440S.0537'	N: 866 440S.1278'	HOLE No.
LOCATION: <b>SOPHIA TUNNEL</b>	ON LINE:	BEARING:	AT CH.	6627
GEOLOGICAL PLAN: SURVEY PLAN: <b>369855 2/3</b>	AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: <b>10-4-63</b> (b) WATER TABLE: <b>18-7-63</b>	SURFACE	COLLAR	WATER TABLE	SHEET No.
METHOD: <b>D.D.</b> DIAMETER: <b>N</b>	<b>714</b>			SHEET <b>7</b> OF <b>10</b> SHEETS
SITE REMARKS: <b>Talus slope Sophia end.</b> <b>Re-drill of D.H. 6620 which was abandoned</b>	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
	INCL.  / HOR. / INC.	<b>+ 3° 30' at 600'</b>	<b>216° 30' M at 600'</b>	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No Per Foot	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS		
										Py-Pyrite	C-Carbonate	O-Open
										Sl-Slickensides	Ch-Chlorite	Q-Quartz
60'0"												
60'5"		1" - 12"										
610'												
615'												
188.1 188.4 620'												
625'												
189.6 191.3 630'		1" - 24"										
635'												
640'												
645'												
650'												
655'												
660'												
665'		1" - 15"										
670'												
675'												
680'												
685'												
690'		1" - 10"										
695'												
700'												

Py-Pyrite      C-Carbonate      O-Open  
Sl-Slickensides      Ch-Chlorite      Q-Quartz

Ferromagnesian minerals chloritised in part.

617 1/2" - 618 1/2" Joints containing galena sphalerite pyrite, chalcopyrite, quartz and chlorite. Analyses of sulphides by Pickands Walker 11/6/67 622' 24" to Mines Dept. for Dating 12-12-75 (Sample not used)

627' 8" Tiny galena crystals, ferromagnesian minerals chloritised in part.

Mainly Sound Rock, Granitic Types.

Ferromagnesian minerals in this zone are chloritised in part.

← TS 051b (chloritized granitic rock).

188.1  
188.4  
189.6  
191.3

160 gpm

230 gpm reducing to 150 gpm



# DRILLING RECORD

SCALED

AREA: <b>PIEMAN INVESTIGATION</b>		POSITION	CO-ORDINATES: E: 369K yds. 0537' N: 856K yds 1278'	HOLE No. <b>6627</b>
LOCATION: <b>SOPHIA TUNNEL</b>			ON LINE: BEARING: AT CH.	FILE No.
GEOLOGICAL PLAN: SURVEY PLAN: 369855 2/3			AT STN: BEARING: DIST:	
DATES (a) DRILLED: 10-4-63 (b) WATER TABLE: 18-7-63		LEVEL	SURFACE COLLAR WATER TABLE	SHEET 9 OF 10 SHEET
METHOD: <b>D.D.</b> DIAMETER: <b>N</b>			714	
SITE REMARKS: <b>Talus slope Sophia end. Re-drill of D.H.6620 which was abandoned.</b>		INCL.	HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
			// / HOR / INC. + 3°30' at 600' 216°30' M at 600'	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS		
										W-Weathered	Sl-Slickensides	O-Open
80'0"												
80'5"					Weathered	5.0 00						Leached in part.
81'0"					Weathered	4.0						
247.0			up to 6"		Chlor. F. sed	4.5 ch						Rock soft in part when wet.
81'5"					Weathered	4.0						
244.9					Weathered	4.5 ch						800'0" - 810'6" } Rock appears to have been weathered
250.7					Weathered	4.0						820'6" - 822'8" } in part & is pale in colour.
82'0"					Chlor. F. sed	4.0						810'6" - 820'0" } Rock has been chloritised in part
251.8					Weathered	4.0						822'6" - 828'0" } & is dark green in colour.
252.4					Weathered	4.0						826'0" Chalcopyrite.
82'5"			1" - 12"		Weathered	3.0						The advanced weathering in part appears to have been the result of prior chloritisation.
83'0"					Weathered	3.0						
83'5"					Weathered	3.0						
84'0"					Weathered	3.0						
256.9					Weathered	2.5						
84'5"			1" - 20"		Weathered	2.5						
85'0"					Weathered	2.5						Leached cavities
85'5"					Weathered	2.5						Leached cavities
86'0"					Weathered	2.5						
86'5"					Weathered	2.5						
87'0"					Weathered	2.5						
266.1					Weathered	1.7						873' 24" to Mines Dept. for Dating 12-12-75
87'5"			1" - 18"		Weathered	1.7						
88'0"					Weathered	1.7						
88'5"					Weathered	1.8						At 887'0" 15" Core to I.M <sup>c</sup> Dougall National University 23-12-63 for age determination.
270.4					Weathered	1.8						
89'0"			1" - 20"		Weathered	2.0						
273.1					Weathered	2.0						896' 24" to Mines Dept. for Dating 12-12-75
89'5"					Weathered	2.0						
90'0"					Weathered	2.0						

# DRILLING RECORD

SCALED

AREA: <i>DIEMAN INVESTIGATION</i>		CO-ORDINATES:	E: 369 KYDS. 0537'	N: 856 KYDS 1278'	HOLE No.
LOCATION: <i>SOPHIA TUNNEL</i>		ON LINE:	BEARING:	AT CH.	6627
GEOLOGICAL PLAN: SURVEY PLAN: <i>369855 2/3</i>		AT STN:	BEARING:	DIST.	FILE No.
DATES (a) DRILLED: <i>10-4-63</i> (b) WATER TABLE: <i>18-7-63</i>		SURFACE	COLLAR	WATER TABLE	SHEET
METHOD: <i>D.D.</i> DIAMETER: <i>N</i>		<i>714</i>			<i>10</i>
SITE REMARKS: <i>Talus slope Sophia end.</i>		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	OF
<i>Re-drill of D.H. 6620 which was abandoned.</i>		<i>—</i> /HOR/INC.	<i>+4°30' at 960'</i>	<i>216°30' at 960'</i>	10 SHEET

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
900'										<p>0 - Open joints Ch-Chlorite</p> <p>Ry - Pyrite</p> <p>W - Weathered joints St-Slickensides</p> <p>C - Carbonate</p> <p>Q - Quartz.</p>
905'		1" - 20"				1.8 ch 0				<p>← TS 0517 (Chloritized granitic rock) (autobreccia)</p>
910'					+	ch 0				Some leached cavities.
915'		1" - 18"				1.8 ch 0				Some open joints are up to 1/2" wide and contain crystal growths, Siderite?
920'					+	some 0				
925'						1.3 ch 0				925' 24" to Mines Dept. for Dating 12-12-75
930'					+	ch 0				
935'		1" - 15"				3.0 Ry W ch				
940'					+	2.0 Qch 0				At 941' two open joints 1" wide with crystal quartz
945'						Ry sl				
950'					+	ch 0				
955'		1" - 12"				25 ch W Ry ch 0				
960'					+	W sl ch				
965'		2" 1" - 12" 2"				9 at least (slight) W C ch 0				In zones indicated as broken, the rock is crumbly in part and the joints contain sand.
970'					+	9 at least Ry ch sl				
975'						sl? ch				
980'		1" - 17"			+	3.0 0				
985'						23 ch 0				
990'					+	2.0				
995'		2" - 15"				1.5				Hole completed at 997'
1000'										Logged by: <i>R. P. Mather</i> <i>D. Ripper</i>

303.9