

VICTORIA UNIVERSITY OF WELLINGTON



**STRATIGRAPHIC SECTIONS OF THE BEACON
SUPERGROUP
(DEVONIAN AND OLDER (?) TO JURASSIC)
IN THE DARWIN MOUNTAINS, ANTARCTICA**

Measured and described

by

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**N. Z. ANTARCTIC RESEARCH PROGRAMME
(WORKING GROUP IN GEOLOGY)**

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STRATIGRAPHIC SECTIONS OF THE BEACON SUPERGROUP IN THE DARWIN
MOUNTAINS, ANTARCTICA.

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TABLE - The Beacon Supergroup in the Darwin Mountains area.

GROUP	AGE	ROCK UNIT	DESCRIPTION	MAX. THICKNESS (METRES)
VICTORIA GROUP	PERMIAN OR TRIASSIC	Ellis Formation	Massive fine sandstone and shaly, slightly carbonaceous very fine sandstone and siltstone. A few rounded white quartz pebbles and plant stems.	177+
	PERMIAN	Misthoun Coal Measures	Massive fine quartzose sandstone. Carbonaceous siltstone and thin coal beds become common in upper part. Poorly preserved <u>Glossopteris</u> and <u>Gangamopteris</u> .	150
TAYLOR GROUP	PERMIAN OR ? CARBONIFER-	Darwin Tillite	Tillite, sandstone, grey, greyish red and greenish grey siltstone. Locally slumped. A few striated surfaces. Clasts are mainly granitic and up to 1m across.	27-82
	?	Hatherton Sandstone	MAYA EROSION SURFACE Massive fine quartzose sandstone. Burrows and trails (including <u>Beaconites</u>) throughout.	329+
		Junction Sandstone	Massive fine to coarse quartzose sandstone. Pinkish quartz grit and pebbles common throughout.	289+
LOWER PALEOZOIC AND PRECAMBRIAN		BASEMENT COMPLEX		

INTRODUCTION.

The following stratigraphic descriptions were made during the 1970-71 Antarctic expedition from Victoria University of Wellington. Most sections were measured with a graduated staff 1.5 m long with an attached Abney level, but a few were measured by eyeheights and this is noted in the description. Each section is divided into formations and units. The units are numbered from oldest to youngest (left hand column) for each formation. Unit thickness is given in column A, and cumulative thickness from the base of the formation (or section, if the base of the formation is not exposed) is in column B.

The location of the base and the initials of the measurers of each section are given before each description. Range and azimuth, latitude and longitude, and elevation have been taken from sheets of the U.S. Geological Survey 1:250,000 reconnaissance series.

Rock properties are described in the following order: gross lithology, colour of unweathered surface, weathered colour ("weathers" has been abbreviated to "w/"), grain size, bedding and splitting properties, and then other comments. The colour reference used is the Geological Society of America Rock Colour Chart. Grain size is given in terms of the Wentworth scale, bedding and splitting properties are those defined by McKee and Weir (1953), except for the term "unbedded" which is used for units which lack any visible internal sedimentary structures. The notation (λ cm; h cm) is for the wavelength and height of ripple marks.

Sample numbers are those of the Victoria University of Wellington rock collection.

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SECTION J1 - UPPER HATHERTON GLACIER

Section measured at west end of low ridge on northeast side of Hatherton Glacier 2.0 km at 332° from Peak 1810, and 1.5 km west of section J2. Measured with staff and level - RAA PJB 1/71.

Position of base 79° 53.2' S; 155° 39.5' E. Map elevation 1600 m.

Unit	A	B
Dolerite sill, about 70 m thick, to top of ridge. Irregular lower contact.		
<u>MISTHOUND COAL MEASURES (109+ m)</u>		
20 Sandstone, pale olive [10Y 6/2] (w/same and light brown [5 YR 6/4]), fine to very fine, indistinctly very thin-bedded, shaly to massive. Indistinct trough cross-bedding. Laminated shaly light olive grey [5Y 6/1] beds from 0.8 to 1.1 m. Light grey (w/yellowish grey [5Y 7/2] and pale brown [5YR 5/2]) concretionary structures up to 1 m across from 6.8 to 7.1. A few medium to dark grey carbonaceous laminae.	9.0	109.1
Sample 23007 4.5 m Sandstone.		
- gradational contact -		
19 Sandstone, yellowish grey [5Y 8/1] (w/same and light brown [5YR 6/4]), fine to medium, laminated to thin-bedded, massive. Trough cross-bedding. Laminae of moderate red [5R 4/6] sand grains (garnet) common. Light olive grey [5Y 6/1] laminae very common. Scattered yellowish grey to medium grey concretions up to 8 x 25 cm. Grit lenses and light olive grey siltstone fragments up to 10 cm across occur above 6 m. Above 8 m the unit becomes finer grained, more slope-forming and has less garnet. Bluff-former in lower part.	14.7	100.1
Sample 23006 4.4 m Sandstone.		
Dolerite sill, 24 m thick.		
18 Sandstone light grey to light olive grey [5Y 6/1] (w/same), very fine to fine, parallel and ripple-laminated, shaly.	2.4	85.4
- gradational contact -		
17 Sandstone, like unit 15. Light grey to yellowish grey [5Y 7/2] (w/same and pale brown [5Y 5/2]), concretions up to 8 x 20 cm at 2.9 and 3.4 m.	5.4	83.0
16 Sandstone, medium grey (w/same, greyish yellow [5Y 8/4] and light olive grey [5Y 6/1]), very fine, laminated, shaly to papery.	1.7	77.6
15 Sandstone, yellowish grey [5Y 8/1] (w/same, light brown [5Y 6/4] greyish yellow [5Y 8/4] -pale olive [10Y 6/2] in lower 0.5 m and some thin layers), fine to medium, laminated to very thin-bedded, massive. Trough cross-bedding. Laminae with moderate red [5Y 4/6] sand grains (probably garnet) common. Occasional laminae and thin beds of pale olive siltstone. A few small scattered coal streaks and medium grey and pale olive siltstone fragments. Medium grey (w/same and pale brown [5Y 5/2]), concretionary structures up to 0.6 m x 2.0 m from 4.5 to 6.5 m. Bluff-former.	10.0	75.9
Sample 23005 1.5 m Sandstone.		
14 Scree, with dark grey shaly carbonaceous siltstone showing through.	6.8	65.9
13 Sandstone, like unit 9. Medium grey (w/same, moderate yellowish brown [10YR 5/4] and light brown [5YR 6/4]) concretionary band from 1.2 to 1.5 and 2.5 to 3.0 m. Concretionary lenses up to 1 m long and 0.2 m thick.	4.4	59.1
12 Scree, with dark grey shaly very fine sandstone showing through.	1.4	54.7
- gradational contact -		

it

	A	B
Sandstone, same as unit 9, but also w/light brown [5YR 5/6]. Carbonaceous siltstone laminae and fragments common. Ripple lamination and trough cross-bedding.	5.4	53.3
- erosion surface -		
Siltstone and very fine sandstone, medium to dark grey (w/same), laminated, shaly. Some thin light grey beds.	3.5	47.9
- gradational contact -		
Sandstone very light grey to white (w/same, greyish yellow [5Y 8/4]), unbedded, massive. Shaly carbonaceous siltstone laminae and thin beds common. Carbonaceous fragments and coal streaks common from 2.8 to 3.2 m.	3.2	44.4
- gradational contact -		
Sandstone, yellowish grey [5Y 7/2] (w/same and light brown [5YR 6/4-5/6]), fine, thin to thick-bedded, massive. Trough cross- bedding.	3.0	41.2
Sample 23004 0.0 m Sandstone.		
Siltstone, dark grey to black (w/same and light olive grey [5Y 5/2]), laminated, shaly to papery.	2.6	38.2
- gradational contact -		
Sandstone, light grey and black (w/same and light olive grey [5Y 6/1]), fine to very fine, ripple-laminated and trough cross-bedded, shaly. Coaly fine sandstone from 2.4 to 2.5 m.	5.8	35.6
- interfingering contact -		
Sandstone, light grey (w/same, light olive grey [5Y 6/1], dark yellowish brown [10YR 4/2] and light brown [5YR 6/4]), fine, ripple-laminated and thin- to thick-bedded, massive. Common medium grey laminae, and occasional lenses and fragments of medium to dark grey siltstone. Scattered rounded white quartz pebbles up to 6 cm long at 1.5 m. Also a very light grey acid volcanic pebbles. Grey carbonaceous laminae become more common toward top. Bluff-former.	10.0	29.8
Sample 23003 4.7 m Sandstone. 23002 1.5 m Volcanic pebble.		
- sharp contact -		
Siltstone, like unit 2. Ripple-laminated light grey sandstone from 1.8 to 3.0 m.	4.1	19.8
- sharp contact -		
Sandstone, like unit 1.	5.0	15.7
Dolerite sill, 10 m thick.		
Siltstone, dark grey (w/same), laminated, shaly to papery. Poorly exposed in scree.	1.5	10.7
- sharp contact -		
Sandstone, yellowish grey [5Y 8/1] (w/same, white and light brown [5YR 6/4]), fine to very fine, thin-bedded to unbedded, massive. Trough cross-bedding. Occasional laminae and thin beds of greenish sandstone. Bluff-former.	9.2	9.2
Sample 23001 6.3 m Sandstone.		

MISTHOUND COAL MEASURES (109+ m)

SECTION J2 - UPPER HATHERTON GLACIER

Section measured up northwest-trending ridge at head of small glacier just north of Peak 1810 on the northeast side of the Hatherton Glacier. Base of section is 2.0 km at 16° from Peak 1810 at top of prominent sill. Measured with rod and level - RAA PJB 1/71.

Position of base 79° 53.1' S; 155° 44' E. Map elevation 1700 m.

Unit		A	B
Dolerite sill, 8 m thick. Upper part comprises three pillars 5 m high and 3 m wide and visible for several miles at the western edge of the promontory.			
<u>ELLIS FORMATION (137+ m)</u>			
18	Sandstone, light grey and light olive grey [5Y 5/2] (w/same and light brown [5Y 5/6]), fine, very thin-bedded, massive. Trough cross-beds. Scattered rounded white vein quartz pebbles up to 6 cm across.	3.6	137.2
	Sample 23025 0.8 m Sandstone.		
17	Scree	2.0	133.6
	Sample 23024 Near top White siltstone.		
16	Sandstone, very light grey to yellowish grey [5Y 8/1] and light olive grey [5Y 5/2] (w/same), fine to very fine, laminated to very thin-bedded, shaly to platy. Parallel bedding. Upper 0.8 m is a light brown [5Y 5/6] bluff.	6.2	131.6
	Sample 23023 2.4 m Sandstone.		
15	Scree. Dolerite and sandstone blocks and chips.	8.0	125.4
14	Sandstone, very light grey (w/same and light brown [5YR 5/6]), fine, laminated to very thin-bedded, massive. Some trough cross-beds. Abundant white stems and silicified wood and a few white quartz pebbles mostly 1 to 2 cm long in lower m, and near base of scour channels at several levels.	25.0	117.4
	Sample 23022 19.6 m Sandstone.		
	23021 2.7 m Sandstone.		
	- erosion surface -		
13	Siltstone, light grey (w/same), coarse, indistinctly laminated, shaly to flaky.	1.4	
	Dolerite sill, 45 m thick. Cuts across units 12 and 13.		
14	Sandstone, very light grey (w/same and light brown [5YR 5/6]), fine, laminated to thick-bedded, massive. Some trough cross-bedding. Carbonaceous laminae fairly common. The lower m includes abundant white stem fragments and silicified logs up to 30 cm across with well developed rings 1 to 3 mm apart, and stringers of rounded white quartz pebbles mostly 1 to 2 cm but up to 4 cm long. Similar quartz pebbles up to 5 cm long from 3.2 to 3.5 m in lenses with olive grey [5Y 5/2] finer sandstone fragments up to 10 cm long and with thin olive grey fine sandstone lenses up to 1.5 m long.	17.0	109.4
	Sample 23020 3.4 m Olive grey sandstone.		
	23019 0.3 m Sandstone.		
	- erosion surface -		
13	Sandstone, like unit 1. Upper 0.8 m has scattered white roots, some with a star-shaped cross-section.	6.4	92.4
	Sample 23018 5.8 m Sandstone with roots.		
	- gradational contact -		

it

	A	B
Sandstone, light grey (w/same, light brown [5YR 5/6] and light olive grey [5Y 6/1]), fine, indistinctly laminated to unbedded, shaly to massive. Some trough cross-bedding. Stringers of white subrounded quartz pebbles up to 6 cm across in lower 0.5 m. Carbonaceous laminae common.	1.5	86.0
Sample 23017 0.3 m Sandstone.		
- erosion surface -		
Siltstone and very fine sandstone, light to dark grey (w/light to medium grey), light olive grey to olive grey [5Y 5/2-3/2] and moderate olive brown [5Y 4/4]), ripple-laminated, shaly to papery.	1.5	84.5
- gradational contact -		
Sandstone, yellowish grey [5Y 8/1] (w/same and light brown [5YR 5/6]), fine, laminated to unbedded, blocky to massive. Thin beds of carbonaceous dark grey siltstone common in lower 2 m. Yellowish grey [5Y 7/2] (w/moderate to dark yellowish brown [10YR 5/4-4/2]) concretionary beds up to 0.5 m thick every 3 m. Unit becomes more shaly to platy above 9 m. Light grey discoidal siltstone fragments up to 20 cm across from 9.0 to 10.3 and 13.0 to 13.2 m. Stem impressions up to 6 cm across at 11.0. A few scattered white vein quartz pebbles at 14.2 m. Bed of subrounded to rounded quartz pebbles mostly 1 to 2 cm but up to 8 cm long from 14.6 to 14.7 m. Also a few light grey sandstone and quartzite pebbles.	17.2	83.0
Sample 23016 14 m Sandstone.		
- slumped contact -		
Siltstone, medium grey to black (w/medium grey and olive grey [5Y 4/1]), coarse laminated, shaly to papery. Coaly in places.	2.5	65.8
- sharp contact -		
Sandstone, very light grey (w/same, white and light brown [5YR 5/6]), fine, indistinctly trough cross-bedded to unbedded, massive. Lenses of shaly light olive grey [5Y 6/1] (w/light olive brown to light olive grey [5Y 5/6-5/2]), siltstone up to 0.5 m thick. Slope-former.	8.6	63.3
- erosion surface -		
Sandstone, medium grey (w/dark reddish brown [10R 3/4] and moderate yellowish brown [10YR 5/4]), fine, laminated to thick-bedded, blocky. Some trough cross-beds. Bluff-former.	1.3	54.7
Sample 23015 1.0 m Sandstone.		
- sharp contact -		
Siltstone and very fine sandstone, very light to medium grey (w/same, light olive grey [5Y 5/2] and moderate yellowish brown [10YR 5/4]), parallel and ripple-laminated, shaly to papery. Lensing thin beds of light grey fine sandstone at 6.0, 7.4, 8.9 to 9.7 and 12.0 to 12.9 m. Unit becomes more carbonaceous and medium to dark grey (w/same and dark yellowish orange [10YR 6/6]) above 9.7 m. Slope-former.	14.4	53.4
Sample 23014 9.6 m Sandstone.		
- gradational contact -		
Sandstone, same as unit 3. Bed of discoidal concretions 1 m across from 1.6 to 1.9 m. Sandstone laminae deformed around margins indicate syngenetic origin.	2.0	39.0
Sample 23013 1.7 m Concretion.		

SECTION J3 - UPPER HATHERTON GLACIER

Section measured on steep face on northeast side of Hatherton Glacier. Base is at glacier level at westernmost part of outcrop 6.1 km at 136° from Peak 1810. Measured with staff and level - PJB GY 1/71.

Position of base 79° 56.5' S; 155° 55.5' E. Map elevation 1100 m.

Unit

A B

Dolerite sill, 36 m thick, overlain by dolerite mounds about 20 m high on extensive platform. Sill climbs to southeast where it is 76 m higher.

HATHERTON SANDSTONE (329+ m)

1 Sandstone, white to yellowish grey [5Y 8/1-7/2] (w/same, moderate reddish orange and moderate reddish brown [10R 6/6-4/6]), fine, laminated to thick-bedded, platy to massive. Mainly parallel but some trough cross-bedding. Quartzose. Occasional dusky yellow [5Y 6/4] (w/same and light brown [5YR 6/4]) beds up to 1 m thick. Indistinct close-packed horizontal sinuous rods about 1 cm across weather out on many bedding planes. More clearly developed higher in unit. A vertical pebbly sandstone dyke about 1.5 m wide cuts the section line at about 14 m. The pebbles are of well-rounded sandstone, quartzite, granite and acid volcanics and are mostly 2 to 5 cm across.

328.7 328.7

At 78 m equant sandstone fragments 1 to 3 cm across weather out. At 91 m Beaconites 7 cm wide and 30 cm long. Beaconites trails mostly 1 to 3 cm across scattered through the rest of the unit.

A few straight vertical columns 0.3 to 1 cm across from 100 to 102 m. From 180 to 270 m the unit weathers mainly white, light brown and moderate reddish brown, and some beds are very well-cemented.

Ferruginous platy to blocky fine light olive brown [5Y 5/6] (w/greyish brown [5YR 3/2], moderate reddish brown and dusky yellow) sandstone from 199.4 to 201.4. Contains nodules 1 to 5 cm across in the upper 0.5 m with a core of pyrite cubes surrounded by a thin very light grey rim.

Well-developed vertical columns 0.3 to 1.0 cm across and up to 10 cm long common from 237 to 245 m, but less obvious at other levels. From 254 to 264 m there are several secondary ferruginous (w/moderate and dark yellowish brown [10YR 5/4-4/2] and moderate to dark reddish brown) lenses up to 1 m thick.

Above 270 m the unit becomes platy to shaly and weathers more yellowish grey and light olive green [5Y 6/1].

In the upper 10 m the unit is unbedded, blocky (w/yellowish grey [5Y 7/2] and light brown) due to the adjacent sill.

Sample 23038	327.8 m	Sandstone.
23037	300.2 m	Sandstone.
23036	282.3 m	Salt-encrusted sandstone.
23035	270.0 m	Sandstone.
23034	240.0 m	Sandstone.
23033	210.5 m	Sandstone.
23032	181.6 m	Sandstone.
23031	150.0 m	Sandstone.
23030	120.2 m	Sandstone.
23029	90.0 m	Sandstone.
23028	60.0 m	Sandstone.
23027	29.7 m	Sandstone.
23026	1.5 m	Sandstone.

HATHERTON SANDSTONE (329+)

Dolerite sill, from 0 to 10 m exposed.

Unit		A	B
4	Sandstone, very light grey (w/same and light brown [5YR 5/6]), fine, indistinctly ripple-laminated, massive. Greenish grey [5GY 6/1] laminae common. Bluff-former. Sample 23012 0.1 m Sandstone. - erosion surface -	1.5	37.0
3	Sandstone, very light grey (w/same, light brown [5YR 5/6] and light olive grey [5Y 5/2]), very fine, laminated to very thin-bedded, mainly massive, but shaly parting develops on weathering. Upper 0.1 m medium grey and carbonaceous. Bluff-former. - gradational contact -	1.3	35.5
2	Sandstone, light grey and yellowish grey [5Y 6/1] with thin beds of light olive grey [5Y 6/1] (w/same, very light olive to light greyish olive [10Y 6/4-5/2] and moderate red [5R 5/4]), fine, indistinctly ripple-laminated to unbedded, mainly massive but some shaly intervals. Light grey (w/white and light brown [5YR 5/6]) concretionary lenses up to 1 m thick and 10 m long. Bluff- and slope-former. Sample 23011 19.5 m Sandstone. 23010 0.9 m Sandstone. 23009 0.4 m Concretion. - sharp contact -	21.5	34.2
1	Sandstone, very light to medium light grey (w/same, yellowish grey [5Y 8/1], olive grey [5Y 4/1], light brown [5YR 5/6] and moderate yellowish brown [10YR 5/4]), fine to very fine, ripple-laminated, shaly to massive. Occasional medium grey siltstone laminae, but carbonaceous sandstone laminae are very common. Scattered light grey concretionary lenses up to 1 m across. Climbing dolerite sheet 2 m thick cuts section at 10.5 m. Slope-former. Sample 23008 4.8 m Sandstone.	12.7	12.7
<u>ELLIS FORMATION</u> (137+ m)			
Dolerite sill, 120 m thick.			
Ice and scree.			
Snow.			

SECTION J4 - UPPER HATHERTON GLACIER

Section measured on steep face on northeast side of Hatherton Glacier. Base is about 400 m southeast of the top of section J3 and 6.8 km at 132° from Peak 1810. Measured by eyeheights - PJB GY 1/71.

Position of base 78° 56.6' S; 155° 57.5' E. Map elevation 1600 m.

Unit	A	B
Dolerite sill, about 100 m thick, to top of ridge.		
<u>MISTHOUND COAL MEASURES (151+ m)</u>		
11 Scree, with patches of siltstone and fine sandstone showing through.	2.7	150.5
10 Sandstone, like unit 6, with medium grey concretions.	1.9	147.8
Sample 23047 0.8 m Concretionary sandstone.		
- scree-covered contact -		
9 Siltstone, light to medium grey (w/same and light olive grey [5Y 5/2]), laminated, shaly to papery.	4.2	145.9
- scree-covered contact -		
8 Sandstone, like unit 6. Light to medium grey concretions above 3 m.	7.6	141.7
Sample 23046 0.6 m Sandstone.		
7 Siltstone and claystone, medium grey to black (w/same and light olive grey to olive grey [5Y 5/2-3/2]), laminated, shaly to papery. Poorly exposed.	19.0	134.1
- sharp contact -		
6 Sandstone, light to medium grey (w/same, light brown [5YR 5/6] and pale brown [5YR 5/2]), fine laminated, massive. Abundant carbonaceous shaly siltstone stringers and fragments up to 30 cm long. Parallel and trough cross-beds. Scattered irregular concretionary structures from a few cm to a m thick.	15.3	115.1
Sample 23045 2 m Sandstone.		
- slumped contact -		
5 Scree, with coaly shaly siltstone showing through in places.	4.2	99.8
4 Sandstone, white (w/same), fine, unbedded, massive. Deeply weathered and poorly exposed. Slope-former. Dolerite sill 1 m thick cuts lower part of unit.	10.2	95.6
- scree-covered contact -		
3 Siltstone, light to medium grey (w/same, and light olive grey to olive grey [5Y 5/2-3/2]) coarse ripple-laminated, shaly to papery. A few thin coaly intervals.	6.0	85.4
- gradational contact -		
2 Sandstone, very light grey (w/same, light bluish grey [5B 7/1] and light brown [5YR 6/4]), fine to very fine, massive to shaly. Lenses of rounded white quartz pebbles mostly 1 to 5 cm but up to 15 cm.	16.7	79.4
Sample 23044 10.2 m Sandstone.		
Dolerite sill, 40 m thick.		
1 Sandstone, white to yellowish grey [5Y 8/1] (w/same and light brown [5YR 5/6]), fine, indistinctly laminated to thick-bedded, massive. Very quartzose and well-cemented. Lenses at base and in lower m of clasts mostly 5 to 20 cm but up to 60 cm long. Most are granitic. Laminae and stringers up to 0.2 m thick of medium grey (w/light olive grey to olive grey [5Y 5/2-3/2]) shaly siltstone	62.7	62.7

common in lower 3 m and present throughout. Lenses of pebbles and grit fill scours at several levels up to 20 m, but include only rounded white vein quartz pebbles above 15 m. Shaly siltstone fragments abundant from 24.7 to 26.4 m. Lens of olive grey shaly siltstone from 37.2 to 37.5 m.

Sample 23043 56.0 m Sandstone.
23042 23.8 m Sandstone.
23041 0.1 m Sandstone.

MISTHOUND COAL MEASURES (151+ m)

- erosion surface -

DARWIN TILLITE (15 m)

Siltstone (tillite), greenish grey [5GY 6/1] (w/same), sandy .11.7 15.1
mainly unbedded, shaly to massive. Sparsely scattered clasts
mainly granite, but also a few white quartz and schist. Clasts
up to 10 cm across below 7 m and up to 18 cm across above 7 m,
except for a granite boulder 65 cm long 1 m below the upper contact.
Discontinuous wavy white fine sandstone from 6.8 to 7.0 m. Unit
is more shaly, w/light olive grey [5Y 5/2], and has scattered thin
ferruginous lenses above 3 m. Slope- or ledge-former.
Dolerite sill 0.4 m thick intruded from 0.3 to 0.7 m below the
contact upper contact on the south face, but climbs into the lower m
of the Misthound Coal Measures to the north.

Sample 23040 2.8 Tillite.

Scree, with flakes of tillite. 3.4 3.4

- erosion surface with 2 m of gentle undulating relief over 20 m -

Approximately 300 m of Hatherton Sandstone and irregularly
intruded dolerite, with the ice of the Hatherton Glacier at the base.

Sample 23039 -0.1 m Sandstone.

SECTION E1 - COLOSSEUM RIDGE

Section measured at north end of Colosseum Ridge up steep south face. Base of section 14.0 km at 025° from Mt. Ellis. Measured with staff and level by RAA PJB 1/71. Position of base 79° 45.1' S; 156° 33' E. Map elevation 1400 m.

Unit		A	B
Dolerite sheet, 24 m thick, to top of hill. Upper 6 m encloses blocks of sandstone up to 10 m long.			
<u>MISTHOUND COAL MEASURES (33+ m)</u>			
2	Sandstone, white, medium-grained, very thin-bedded, massive. Trough cross-bedding. Sample 23070 0.2 m Sandstone.	3.0	32.8
1	Sandstone, light grey (w/yellowish grey [5Y 7/2] and light brown [5Y 6/4]), fine, indistinctly laminated, massive. Trough cross-bedding. Lenses of pebbles up to 30 cm across mostly granite, with some quartz and quartzite, sandstone and schist in lower 1.5 m. Small pebbles and grit at 2.5 m. Carbonaceous sandstone and siltstone beds and lenses from 5.7 to 6.0 m, 9 to 12 m and at 28 m. Coal streaks from 6.6 to 12 m and plant stems at 10 m. A few siltstone fragments mostly 1 to 4 cm across in upper 0.3 m. Sample 23069 19.8 m Sandstone. 23068 0.1 m Sandstone.	29.8	29.8
- erosion surface -			
<u>DARWIN TILLITE (27 m)</u>			
4	Siltstone and claystone, mainly medium grey but dark grey in lower 2 m (w/light to medium grey), laminated, shaly to papery. Ledge-forming ripple-laminated very fine sandstone from 14.3 to 14.5 m and every 1 to 3 m above this. Sample 23067 20.9 m Sandstone. 23066 19.6 m Siltstone. 23065 0.5 m Salt efflorescence. 23064 0.4 m Siltstone.	21.0	27.2
- sharp contact -			
3	Sandstone, light grey, fine, indistinctly laminated, massive. Sample 23063 0.2 m Sandstone.	0.5	6.2
- gradational contact -			
2	Conglomerate, light grey (w/same and white), fine with fine sand matrix. Pebbles mostly 2 to 4 cm but up to 20 cm and subrounded. Lithologies include granite, quartzite, quartz, mica schist, sandstone. - gradational contact -	4.3	5.7
1	Siltstone and very fine sandstone, very light grey (w/same), indistinctly laminated, very thin-bedded, shaly to flaggy. - erosion surface with up to 15 m relief over 30 m. Flat surface at east end of platform has remnant rounded ridges of Hatherton sandstone 0.5 m high, 3 m wide and 15 m long striking at 357°, 5° and 7°. Groove 1 m deep strikes at 328° -	1.4	1.4
<u>HATHERTON SANDSTONE (223+ m)</u>			
3	Sandstone, white (w/light brown [5YR 6/4], yellowish grey [5Y 7/2] and pale red [5R 6/2]), fine, laminated, very thin-bedded, massive. Trough cross-bedding. Scattered disc-shaped concretions mostly 2 to 4 cm but up to 8 cm across from 1 to 2 m and 18 to 20 m. Sample 23062 15.4 m Sandstone.	21.	223.0
- erosion surface -			

Unit	A	B
2 Sandstone, like unit 1, but more quartzose and lighter-coloured, very thin- to very thick-bedded, massive. Mainly indistinctly parallel-bedded, but trough cross-bedding common in the upper 30 m. <u>Beaconites</u> trails at several levels throughout unit, but especially common and large (up to 5 cm across) at 76 m. Other structureless sinuous burrows common on some bedding surfaces. Star-shaped arrangement of 4-mm-wide furrows 8 cm across at 1 m. Stem impression 3 cm wide at 2 m. Bed of disc-shaped concretions up to 30 cm across at 32 m. Sparse scattered round concretions 8 to 10 cm across (w/dark grey and dark brown) above 35 m. Ripple marks at 99 m (λ 2.0 cm; λ 0.2 cm). Base of unit is base of small bluff. Larger bluff extends from 35 to 90 m.	112.	202.0

Sample 23061	110.3 m	Sandstone.
23060	89.5 m	Sandstone.
23059	70.5 m	Sandstone.
23058	50.0 m	Sandstone.
23057	31.0 m	Sandstone.
23056	10.3 m	Sandstone.

- gradational contact -

1 Sandstone, greyish orange [10YR 6/4] (w/same, medium dark grey, light brown [5YR 5/6], dusky yellow [5Y 6/4] and dark yellowish brown [10 YR 4/2]), fine, laminated to thick-bedded, flaggy to massive. Mainly parallel but some trough cross-bedding. Scattered vertical tubes 0.5 cm long from 45 to 52 and above 75 m. Bed of dark grey and dusky yellow concretions up to 30 cm across at 16 and 41 m. Scattered ferruginous concretions up to 5 cm across from 47 to 48 m. Long narrow concretions up to 1 m long (w/olive grey [5Y 4/1], dark yellowish orange [10YR 6/6] and black) at 72 m.	90.	90.0
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Sample 23055	79.1 m	Sandstone.
23054	60.6 m	Sandstone.
23053	41.8 m	Sandstone.
23052	20.8 m	Sandstone.
23051	1.1 m	Sandstone.

HATHERTON SANDSTONE (223+ m)

Snow.

SECTION E2 - COLOSSEUM RIDGE

Section measured near north end of Colosseum Ridge on a southeast slope from the top of the Hatherton Sandstone to the base of the Misthound Coal Measures. Base of section is 14.0 km at 21° from Mt. Ellis. Measured with staff and level by RAA PJB 1/71. Position of base 79°45.0' S; 156° 30.5' E. Map elevation 1550 m.

Unit	A	B
About 30 m of sandstone (Misthound Coal Measures) to top of ridge. - erosion surface -		
<u>DARWIN TILLITE</u> (82 m)		
8 Siltstone, light to dark grey (w/same, light olive grey [5Y 5/2] and greyish olive [10Y 4/2]), fine, finely laminated, shaly to papery. - gradational contact -	6.3	82.1
7 Sandstone, (tillite), coloured like unit 5, fine and poorly sorted, unbedded except for a few water-sorted lenses, massive. Scattered subrounded to well-rounded clasts of granite, sandstone and white quartz up to 20 cm across. Clasts occasionally in thin lenses. Rafts of fine white sandstone mostly 1 m but up to 6 m long with no consistent orientation. Slope former. Sample 23071 0-2 m Pebbles. - gradational contact -	3.8	75.8
6 Sandstone, white (w/yellowish grey [5Y 8/1] and light to dark yellowish brown [10YR 6/2-4/2]), fine, indistinctly laminated, massive. Pebbles, mainly quartz and mica schist, in thin lenses in lower 1.5 m. Bluff former. Sample 23076 0.9 m Sandstone. - erosion surface -	4.0	72.0
5 Sandstone (tillite), light bluish grey [5B 7/1] (w/greenish grey [5GY 6/1] and moderate olive brown [5Y 4/4]), fine and poorly sorted, mostly unbedded, with a few water-sorted beds, massive. Scattered clasts up to 20 cm across, mainly granite and quartz. Bed of dark grey concretions up to 2 m long at base of unit. Sample 23075 4.6 m Sandstone (tillite). - gradational contact -	9.0	68.0
4 Sandstone (tillite), greyish red [5R 4/2] and light greenish grey [5G 8/1] (w/same), fine and poorly sorted, unbedded with some irregular colour banding, massive and friable. Beds of fine sandstone up to 30 cm thick 1 to 3 m apart with ripple-marked upper surfaces above 4 m. Scattered quartzite and coarse sandstone pebbles up to 6 cm across and granite clasts up to 50 cm across. Red colouration fades gradually upward and is last seen at 26 m where it has a very irregular contact with the grey. Sample 23074 3.4 m Sandstone. - sharp contact -	27.0	59.0
3 Sandstone, very light grey, fine, very thin- to thin-bedded, flaggy. Asymmetrical ripple marks common on upper surfaces (λ 10 cm; h 1 cm). Sample 23073 0.0 m Sandstone. -sharp contact -	3.7	32.0

Unit	A	B
2 Sandstone, about half greenish grey [5GY 6/1]with rest greyish red [5R 4/2], pale red [5R 6/2]and medium grey with purple tinge (w/same), very fine to fine, laminated to thin-bedded, shaly to papery. Moderately friable. Laminae of clay and coarse sand. Extensively slumped in lower 7 m.	11.8	28.3

Sample 23072 3.0 m Sandstone.

- sharp colour contact -

1 Claystone with common siltstone and very fine to fine sandstone beds, greenish grey [5G 6/1], greyish orange pink [5YR 7/2] and light bluish grey [5B 7/1] (w/same), laminated, shaly and papery. Striations with 2 mm relief at base and at 4.5 m. Fine white quartzose sandstone lens from 5.0 to 5.8 m has scattered granite and quartz pebbles up to 4 cm across. A few greyish red siltstone laminae above 6 m. Fine very light grey sandstone from 8.7 to 9.0 m. Slumped strata between 5.8 and 13.5 m. Unit poorly exposed through scree.	16.5	16.5
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DARWIN TILLITE (82 m)

- erosion surface with undulating relief of 30 m over 200 m -

About 200 m of Hatherton Sandstone form steep slope down to edge of glacier.

SECTION E3 - MOUNT ELLIS

Section measured from base to top of small hill near foot of Mount Ellis. Base of section is 2.0 km at 31° from Mt. Ellis. Measured with staff and level by RAA GY 1/71. Position of base 79° 50.9' S; 156° 17.5' E. Map elevation 1700 m.

Unit	A	B
<u>ELLIS FORMATION (60+ m)</u>		
Dolerite sills and scree, about 100 m, to top of hill.		
<u>Note:</u> On southeast side of outcrop this interval is better exposed. The upper 6 m is sandstone, light grey (w/same, light brown [5YR 5/6], dusky yellow [5Y 6/4], dark yellowish brown [10YR 4/1]), fine?, laminated to unbedded, massive. Abundant carbonaceous laminae, coal streaks, and stem impressions up to 1 cm across. A few scattered rounded to subangular white quartz pebbles mostly 1 cm but up to 3 cm across. Underlying this is about 50 m of scree with scattered outcrops of very fine to fine light to dark grey (w/same) sandstone and siltstone.		
3 Sandstone, light grey (w/same, light brown [5YR 5/6], moderate yellowish brown [10YR 5/4]), very fine to fine, parallel-laminated and trough cross-bedded, platy to massive. Dark grey carbonaceous bed from 3.5 to 4.0 m.	7.0	22.0
Sample 23080 5.0 m Sandstone.		
Dolerite sill, 2 m thick.		
2 Scree, dolerite.	2.5	15.0
1 Sandstone, light grey (w/same, yellowish grey [5Y 7/2], moderate yellowish brown [10YR 5/4]), very fine to fine, laminated to very thin-bedded, shaly to platy and massive. Lower 10.5 m is poorly exposed in scree.	12.5	12.5
Sample 23079 11.0 m Sandstone.		
Dolerite sill, 30 m thick.		
<u>MISTHOUND COAL MEASURES (78+ m)</u>		
7 Scree, mainly dolerite, with fine sandstone, light grey to yellowish grey [5Y 7/2], and very fine to fine medium to dark grey sandstone (w/light to dark grey, light olive grey [5Y 5/2]), and coal.	32.0	78.2
6 Sandstone, dark grey (w/same, medium light grey), very fine to fine, laminated to very thin-bedded, shaly to platy. Very carbonaceous with occasional striate stems. Upper 0.3 m is coal.	2.5	46.2
Sample 23078 1.0 m Sandstone (with stem).		
5 Scree, mainly dolerite, with light grey and yellowish grey [5Y 7/2] fine sandstone, and carbonaceous very fine sandstone.	5.2	43.7
Dolerite sill, 8 m thick.		
4 Sandstone, light grey (w/same, yellowish grey [5Y 7/2], fine, laminated, papery to shaly. Upper 3 m is poorly exposed in scree.	3.9	38.5
3 Scree, mainly dolerite, with yellowish grey [5Y 7/2] fine sandstone and dark grey very fine to fine sandstone (w/light to dark grey).	12.0	34.6
2 Sandstone, yellowish grey [5Y 7/2] (w/same, moderate yellowish brown [10YR 5/4]), fine, laminated and indistinctly trough cross-bedded, massive. Light to medium grey carbonaceous laminae in lower 0.1 m.	0.6	22.6
Sample 23077 0.3 m Sandstone.		
1 Scree, mainly dolerite, with debris of fine white and very light grey sandstone (w/same, yellowish grey [5Y 7/2], moderate yellowish brown [10YR 5/4]).	22.0	22.0
Dolerite sill 15m thick		

SECTION VI - UPPER HATHERTON GLACIER

Section measured from moraine at southwest edge of upper Hatherton Glacier 3.0 km at 153° from Peak 2280. Measured with staff by RAA SC 1/71.

Position of base 79° 53.1' S; 155° 15.5' E. Map elevation 1700 m.

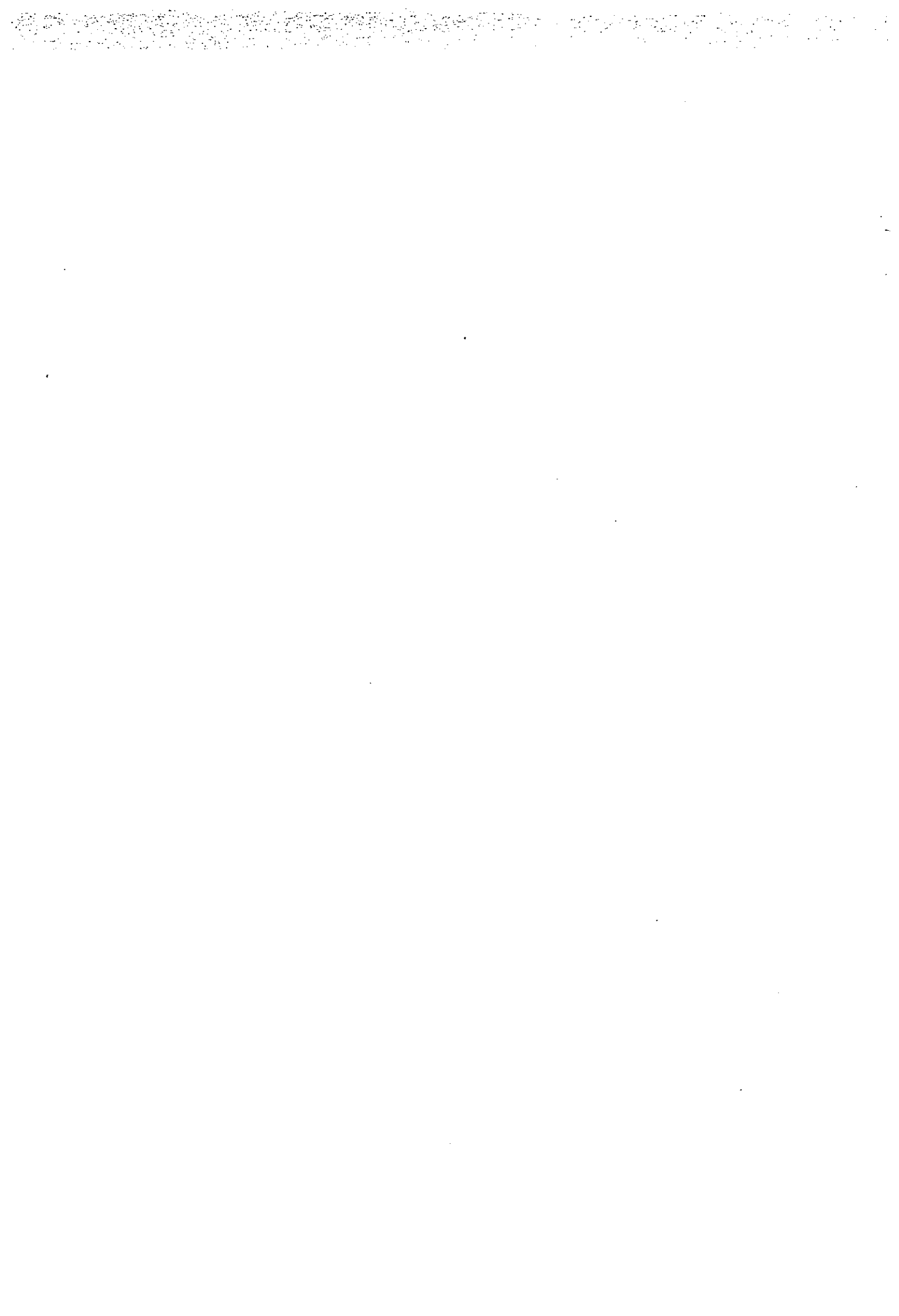
Unit	A	B
Dolerite sill.		
<u>ELLIS FORMATION</u> (13+ m)		
3 Sandstone, white to very light grey (w/same, light brown [5YR 6/4-5/6]), very fine to fine, parallel and ripple-laminated, trough cross-bedded, massive. Carbonaceous laminae common. Becomes finer towards top and grades into light grey siltstone in upper 0.7 m. Horizon of light olive grey [5Y 5/2] siltstone fragments 1 cm across in a light grey sandy matrix at 4.6 m. Bluff former.	5.0	12.5
- sharp contact -		
2 Sandstone, white to very light grey (w/same, light olive grey [5Y 5/2], light brown [5YR 6/4-5/6], moderate reddish brown [10R 4/6]), very fine, parallel and ripple-laminated, massive. Carbonaceous laminae common. Becomes finer towards top with lenses of light olive grey siltstone in upper 0.2 m. Light grey sandstone concretions structures from 0.9 - 2.0 m (w/pale to moderate yellowish brown [10YR 6/2 - 5/4], yellowish grey [5Y 8/1]). Bluff former.	4.5	7.5
Sample 23148 3.4 m Sandstone.		
- sharp contact -		
1 Sandstone and siltstone, very light grey (w/same, yellowish grey [5Y 8/1], light brown [5YR 6/4]), fine to very fine, parallel and ripple-laminated and very thin-bedded, blocky to massive. Trough cross-bedded. Very common carbonaceous laminae (w/light olive grey [5Y 5/2]). Becomes finer towards top. Bluff former.	3.0	3.0
Sample 23147 2.3 m Sandstone.		
- irregular contact -		
Dolerite sill, 7+ m thick.		
Scree and rubbly mounds of moraine. Debris includes fine and very coarse grained dolerite, amygdaloidal dolerite, sandstone, carbonaceous shaly siltstone, greenish grey siltstone, and tillite.		

SECTION E4 - COLOSSEUM RIDGE

Section measured on southeast side of steep-walled promontory at south end of Colosseum Ridge. Base of section 3.7 km at 359° from Mt. Ellis. Measured with staff and level by RAA GY 1/71.

Position of base 79° 49.9' S; 156° 14' E. Map elevation 2000 m.

Unit	A	B
Dolerite sill.		
<u>ELLIS FORMATION</u> (177+ m)		
19 Scree, dolerite.	15.0	176.7
18 Sandstone, very light grey (w/same, light brown [5YR 5/6]), fine, parallel and ripple-laminated, and unbedded, massive. White and grey subrounded to rounded quartz pebbles mostly 1 to 2 cm but up to 5 cm across, and light olive grey siltstone fragments up to 3 cm across in basal 0.1 m. Scattered rounded white quartz pebbles up to 3 cm across above 0.5 m.	7.0	161.7
Sample 23092 4.5 m Sandstone.		
- erosion surface -		
17 Very fine sandstone and siltstone, light to medium dark grey (w/same, light brown [5YR 6/4], light olive grey [5Y 5/2]), laminated, papery to shaly.	1.9	154.7
16 Snow slope, with occasional small outcrops and debris of light grey shaly very fine sandstone and siltstone.	4.5	152.8
15 Sandstone, yellowish grey [5Y 7/2] (w/same, light brown [5YR 6/4-5/6], moderate reddish brown [10R 4/6], light olive grey [5Y 5/2]), very fine to fine, laminated to very thin-bedded, trough cross-bedded, shaly to platy and massive. Light olive grey carbonaceous laminae common.	3.5	148.3
Sample 23091 1.3 m Sandstone.		
14 Snow, and occasional small outcrops and debris of yellowish grey [5Y 7/2] fine sandstone.	3.5	144.8
13 Sandstone, yellowish grey [5Y 8/1] to light grey (w/same, light brown [5YR 5/6], moderate yellowish brown [10YR 5/4]), fine to medium laminated, very thin-bedded to unbedded, mainly massive with some platy intervals. Trough cross-bedding and carbonaceous laminae common. Fairly common coarser grained (w/moderate yellowish brown [10YR 5/4]) sandstone concretions up to 15 cm long. Scattered and in layers. Bluff former.	6.0	141.3
Sample 23090 0.6 m Sandstone.		
Dolerite sill, 2 m thick.		
12 Scree, dolerite.	14.8	135.3
11 Sandstone, light grey (w/same, light brown [5YR 5/6], moderate reddish orange [10R 6/6], moderate yellowish brown [10YR 5/4]), fine, laminated and unbedded, trough cross bedded, mainly massive, also platy. Abundant carbonaceous laminae. Stringers of subrounded white quartz pebbles 0.5 to 2 cm across and coal streaks from 7.2 to 7.6 m. Tongue of dolerite sill at 8.0 m. A few scattered concretions weathering moderate yellowish brown [10YR 5/4] up to 10 cm across above 10 m. Scattered round white quartz pebbles up to 4 cm across from 13.9 to 14.5 m. Concretionary bed of sandstone (w/moderate yellowish brown [10YR 5/4]) with knobby weathering from 18.2 to 18.4 m. Bluff former up to 17 m.	34.0	120.5
Sample 23089 22.0 m Sandstone.		
23089 1.2 m Sandstone.		



Unit	A	B
Dolerite sill and scree, 3 m thick.		
10 Sandstone, very light grey (w/same, light brown [5YR 5/6], moderate yellowish orange [10YR 7/6]), very fine to fine, parallel and ripple-laminated, and very thin-bedded to unbedded, mainly massive but also platy. Subrounded white quartz pebbles up to 3 cm across from 2.5 to 2.6 m, overlain by 0.1 m of medium grey siltstone fragments up to 3 cm across. Bed of medium to dark grey very fine sandstone and siltstone from 3.0 to 3.2 m. Sample 23087 1.7 m Sandstone.	10.7	86.5
9 Snow and fallen sandstone blocks.	1.5	75.8
8 Sandstone, light to medium grey (w/same, light brown [5YR 5/6], dusky yellow [5Y 6/4]), fine, laminated to unbedded, massive. Scattered coal streaks, carbonaceous finer grained streaks and laminae (w/light olive grey [5Y 5/2]), and medium grey siltstone fragments mostly 1 to 3 cm but up to 10 cm across fairly common. A few scattered white subrounded quartz pebbles mostly 1 cm but up to 3 cm across. Bed of subrounded white quartz pebbles mostly 1 cm but up to 3 cm across and dark grey siltstone fragments mostly 1 to 2 cm but up to 4 cm across at 9.5 m. Sample 23086 9.1 m Sandstone.	15.7	74.3
- gradational contact -		
7 Sandstone, light grey (w/same, moderate reddish brown [10R 4/6], light brown [5YR 5/6], moderate yellowish brown [10YR 5/4]), fine, laminated and very thin bedded to unbedded, massive. Sample 23085 5.3 m Sandstone.	17.4	58.6
- sharp contact -		
6 Sandstone, medium grey (w/moderate yellowish brown [10YR 5/4], light brown [5YR 5/6], moderate brown [5YR 3/4]), fine, very thin bedded to unbedded, massive with knobby weathering (?Concretionary layer). Scattered rounded white quartz pebbles up to 3 cm across, and abundant stem impressions up to 7 cm across. Bluff former - top of this unit forms top of bluff. - erosion surface -	0.5	41.2
5 Sandstone, light grey (w/same, yellowish grey [5Y 7/2], light brown [5YR 5/6]), fine, unbedded but occasionally laminated, massive. A 50 cm thick black and moderate yellow [5Y 7/6] concretionary band at base. Abundant stem impressions up to 7 cm across and coal streaks. Plant remains are dark yellowish orange to dark yellowish brown [10YR 6/6-4/2]. Light grey laminated siltstone bed from 1.5 to 1.8 m. Moderate yellow concretions up to 30 cm across at 1.1 m. Upper 0.8 m is laminated and shaly. Bluff former. Sample 23084 2.7 m Sandstone.	8.7	40.7
- sharp contact -		
4 Very fine sandstone to siltstone, light greenish grey [5GY 8/1] to light grey (w/same, light brown [5YR 5/6]), laminated to unbedded, shaly to massive. Thin beds of shaly medium dark grey siltstone from 5.0 to 6.8 m. Occasional scattered subangular white quartz pebbles up to 10 cm across in upper 1 m. Lower part of unit is bluff former - top of high vertical bluffs of lower part of section is at 2 m. - gradational contact -	8.0	32.0

Unit		A	B
3	Sandstone, like unit 1. Bluff former. Sample 23083 6.8 m Sandstone.	7.5	24.0
	- gradational contact -		
2	Sandstone, yellowish grey [5Y 7/2] (w/light brown [5YR 6/4-5/6] dark yellowish brown [10YR 4/2], dusky yellowish brown [10YR 2/2]), fine, parallel and ripple laminated and unbedded, massive. Pale brown [5YR 5/2] laminae common. Dark brown concretions up to 10 cm across at 2.4 m. Bluff former. Sample 23082 2.2 m Sandstone.	3.0	16.5
	- sharp contact -		
1	Sandstone, yellowish grey [5Y 6/2] to light olive grey [5Y 6/1] (w/same, light olive grey [5Y 5/2], light brown [5YR 5/6]), very fine to fine, parallel and ripple laminated to very thin bedded, platy in places but mainly massive. Moderate olive grey (?carbonaceous) [5Y 4/2] laminae common. White to very light grey lenses and laminae of slightly coarser grained sandstone are fairly common and often enclose finer grained greenish sandstone fragments. A few scattered flattened moderate yellow [5Y 7/6] concretions up to 10 cm across above 9.5 m. Sandstone becomes finer and more carbonaceous towards top of unit. Bluff former. Sample 23081 2.5 m Sandstone.	13.5	13.5

ELLIS FORMATION (177+ m)

Dolerite sill, about 100 m thick.

Scree, mostly dolerite but with occasional small blocks and fragments
of sandstone and rarer tillite and siltstone.

SECTION E5 - JUNCTION SPUR

Section measured on northwest ridge of peak 2.7 km west of Junction Spur. Lower 100 m was measured on the southwest slope of the ridge beginning at a sandstone bluff at the top of an ice slope and 30 m southeast of a climbing dolerite sheet about 100 m thick. Base of section is 5.2 km at 295° from Junction Spur. The section was continued up the ridge to a dolerite-tipped subsidiary peak 4.0 km at 291° from Junction Spur. Measured with staff - PJB SC 1/71.

Position of base 79° 51.7 S; 157° 20.5' E. Map elevation 1000 m.

Unit	A	B
Dolerite sheet, 10 m thick, forms top of peak.		
<u>HATHERTON SANDSTONE (17+ m)</u>		
1 Sandstone, white (w/same and yellowish grey [5Y 7/2]), fine to medium, very thin-bedded, massive. Lenses of quartz grit and white subrounded vein quartz pebbles common. A few light grey quartz pebbles.	17.	17.0
Sample 23100 5.0 m Sandstone		
- sharp contact -		
<u>JUNCTION SANDSTONE (289+ m)</u>		
10 Sandstone, like unit 8. Unit becomes more quartzose and there are pebbles up to 6 cm across above 7 m. The sandstone includes fragments of fine sandstone up to 10 cm across. Thin beds of dusky yellow [5Y 6/4], moderate to dark yellowish brown [10YR 5/4-4/2] and greenish grey [5GY 6/1] fine to medium sandstone every 2 to 4 m. Bed of light olive grey [5Y 5/2] and dark yellowish brown gritty quartzose fine sandstone from 16.5 to 17.0 m. Concretionary layer (w/moderate to dark yellowish brown) from 58 to 62 m. Intervals from 50 to 57 and 60 to 63 m covered with dolerite and sandstone scree.	73.	289.1
<u>Note:</u> Top of knob on ridge is at 8 m. Base of unit walked out for about 400 m to southeast along ridge to foot of next rise, where the section continued.		
Sample 23120 65.6 m Sandstone.		
23119 46.5 m Sandstone.		
23118 27.0 m Sandstone.		
23117 7.5 m Sandstone.		
- gradational contact -		
9 Sandstone, like unit 8, but with mainly medium to coarse sandstone, and with pinkish and white quartz pebbles. Largest pebbles are 5 cm across. Bluff-former.	15.0	216.1
Sample 23116 1.7 m Medium sandstone.		
sharp contact -		
8 Sandstone, white to very light grey (w/like unit 6), fine to coarse and gritty, very thin-bedded, platy to massive. Trough cross-bedded. Subrounded pinkish quartz pebbles and grit scattered and in lenses. Pebbles up to 3 cm long.	18.0	201.1
Sample 23115 0.1 m Pebbly sandstone.		
7 Sandstone, white to very light grey (w/like unit 6), fine, unbedded, slabby to blocky. Intensely burrowed, with abundant vertical tubes 1 to 2 cm across and several cm deep. There are also bedding surfaces with networks of similar-sized tubes in the upper m. Unit becomes greenish grey [5GY 6/1] in upper m.	11.6	183.1
Sample 23114 8.0 m Sandstone.		
6 Sandstone, white to very light grey (w/same, light brown [5YR 6/4], and moderate yellowish brown [10YR 5/4]), medium to coarse, unbedded, massive. Mainly trough cross-bedded. Lenses of pink	52.0	171.5

Unit

A B

quartz grit and pebbles up to 2 cm across common. Greenish grey or greenish black [5G 6/1-2/1] gritty fine sandstone beds with pinkish quartz pebbles every 2 to 3 m up to 20 m. They occur only occasionally above this. Lower contact is gradational and upper contact is sharp. Pinkish quartz grit and pebbles become abundant above 19 m. Vertical and horizontal tubes 1 to 2 cm across at 16.5 m, and tubes 0.5 cm across and several cm deep become common above 20 m.

Sample 23113 39.0 m Sandstone.
23112 22.8 m Sandstone.
23111 19.5 m Grit.
23110 4.5 m Greenish grey sandstone.

- gradational contact -

5 Sandstone, very light grey grading up into greenish grey and greenish black [5G 6/1-2/1] in three cycles (w/same and light brown [5Y 6/4]), fine to coarse, very thin-bedded to unbedded, blocky to massive. Subangular pinkish quartz pebbles up to 1 cm across common throughout. Light-coloured basal sandstone of each cycle includes sandstone fragments up to 8 cm long.

Sample 23109 1.6 m Greenish black sandstone.

- erosion surface -

4 Sandstone, yellowish grey [5Y 7/2] (w/very light grey and light brown [5YR 6/4]), fine to medium, very thin-bedded, massive. Quartzose and parallel-bedded. Gritty sandstone beds with pinkish quartz pebbles appear and are common above 2.5 m. Prominent bluff-former.

Sample 23108 2.3 m Sandstone.

- slumped contact -

3 Sandstone, like unit 1. A few pinkish subangular quartz pebbles up to 1 cm across. Weathered out fine sandstone fragments mostly 1 to 5 cm, but up to 10 cm across. Scattered brownish concretions. Micaceous dark olive grey [5Y 3/1] fine sandstone from 2.1 to 2.2 m. Gritty sandstone beds and pinkish pebbles become more common about 50 m.

Sample 23107 68.0 m Greenish grey sandstone.
23106 40.5 m White sandstone.
23105 18.0 m White sandstone.

2 Sandstone, white to medium grey (w/same and moderate to dark yellowish brown [10YR 5/4-4/2]), fine, unbedded, massive. Slope-former.

Sample 23104 2.8 m Medium grey sandstone.

- scree-covered contact -

1 Sandstone, light to very light grey (w/same, light brown [5YR 6/4]), fine to medium, laminated to thick-bedded, massive. Mainly parallel bedding but some trough cross-bedding. The light coloured bluff-forming sandstone in beds several m thick grades up through alternating beds into a greenish grey slope-forming sandstone of similar or lesser thickness. Indistinct vertical tubes 0.3 to 0.5 cm across and several cm long at several levels. A few brownish spheroidal concretions mostly 10 but up to 50 cm across.

Sample 23103 38.1 m Sandstone.
23102 20.4 m Sandstone.
23101 0.8 m Sandstone.

JUNCTION SANDSTONE (289+ m)

Ice, with embedded sandstone scree.

SECTION E6 - COLOSSEUM RIDGE

Section measured up northeast side of conical hill midway along Colosseum Ridge. Base of section is platform on top of Hatherton Sandstone 7.8 km at 016° from Mt. Ellis. Measured by staff and level - RAA PJB 1/71. Position of base 79° 47.9' S; 156° 21' E. Map elevation 1800 m.

Unit	A	B
Dolerite sill, 70 m thick, forms top of peak.		
<u>MISTHOUND COAL MEASURES (135+ m)</u>		
19 Scree, dolerite blocks.	11.1	135.3
18 Sandstone, light to medium grey (w/light grey), fine, very thin-bedded to unbedded, massive. Becomes more carbonaceous above 6 m.	9.3	124.2
Sample 23099 7.8 m Sandstone.		
Dolerite sill, 2 m thick.		
17 Scree, with patches of sandstone like unit 14 at 3, 6 and 8 m, but some is ripple-laminated and rather carbonaceous.	11.9	114.9
16 Siltstone, dark grey to black (w/same), coarse, laminated, shaly.	0.7	103.0
- sharp contact -		
15 Sandstone, light grey (w/same and greyish orange [10YR 6/4]), fine, very thin-bedded to unbedded, massive.	3.5	102.3
Sample 23098 0.4 m Sandstone.		
14 Scree, with baked shale in lower m and a patch of dark grey shaly siltstone from 3 to 4 m. Shale scattered in scree between dolerite fragments.	8.3	98.8
Dolerite sill, 20 m thick.		
13 Scree, with dolerite and sandstone blocks, and patches of yellowish grey [5Y 7/2] shaly fine sandstone near top.	8.8	90.5
12 Sandstone, medium to dark grey (w/same and light olive grey [5Y 6/1]), fine, ripple-laminated, shaly to papery.	1.5	81.7
- gradational contact -		
11 Sandstone, like unit 9.	4.2	80.2
- sharp contact -		
10 Siltstone and very fine sandstone, medium to dark grey (w/same), laminated, shaly. Carbonaceous.	1.3	76.0
9 Sandstone, light to medium grey (w/same and yellowish grey [5Y 7/2]), fine, very thin-bedded to unbedded, massive. Lower 0.4 m is medium to coarse and includes in lower 0.1 m white, grey and pinkish rounded quartz pebbles mostly 0.5 to 2.0 cm but up to 8 cm across.	12.9	74.7
- sharp contact -		
8 Coal, banded. Thin shaly beds common.	0.5	61.8
- gradational contact -		
7 Siltstone, medium grey to black (w/same), laminated, shaly.	0.7	61.3
- gradational contact -		
6 Sandstone, light to dark grey (w/same, light brown [5YR 6/4] and yellowish grey [5Y 7/2]), fine, ripple-laminated, shaly to massive. Coal laminae and streaks common. A few stem fragments. Poorly preserved <u>Glossopteris</u> .	13.2	60.6
Sample 23097 10.5 m Sandstone.		
23096 8.0 m <u>Glossopteris</u> .		

Unit	A	B
5 Sandstone, light to dark grey (w/same, dusky yellow [5Y 6/4], dark yellowish brown [10YR 4/2] and moderate to dark yellowish orange [10YR 7/6-6/6]), fine, very thin-bedded, platy to massive. Coal laminae and streaks very common. Trough cross-bedding. Slope-former. Sample 23095 7.6 m Sandstone.	8.4	47.4
- erosion surface -		
4 Sandstone, like unit 2.	7.2	39.0
3 Sandstone, light to dark grey (w/same), fine, laminated, shaly to platy.	2.1	31.8
2 Sandstone, light grey (w/same, light brown [5YR 5/6] and moderate yellowish orange [10YR 7/6]), fine, indistinctly laminated to unbedded, platy to massive. Interbedded dark grey laminated shaly very fine sandstone forms up to 10 percent of the unit. Coal streaks common. A few rounded white and grey quartz pebbles 2 to 3 cm across from 0.7 to 0.8 m. Slope-former.	4.2	29.7
- interfingering contact -		
1 Sandstone, yellowish grey [5Y 8/1] (w/same, light brown and moderate brown [5YR 5/6-3/4] and dark yellowish orange [10YR 6/6]), fine, indistinctly laminated to unbedded, massive. Trough cross-bedded. Carbonaceous laminae (w/light olive grey [5Y 6/1]) and coal streaks scattered and in 0.1 m thick beds every 1 to 3 m. Rounded white and light grey quartz pebbles from 1 to 10 cm across at 8.7 m. Scattered spheroidal concretions (w/dark yellowish orange) from 2 to 10 cm across. Several quartz pebbles, greenish grey [5GY 6/1] siltstone fragments 1 to 8 cm long, and coal streaks and stem impressions up to 8 cm long from 16.1 to 16.8 m. A few pebbles also at 18.3 and 21.0 m. Unit more carbonaceous in upper 5 m. Bluff-former. Sample 23094 24.8 m Sandstone. 23093 6.9 m Sandstone.	25.5	25.5

MISTHOUND COAL MEASURES (135+ m)

- scree-covered contact -

DARWIN TILLITE (29 m)

Formation here covered with dolerite and sandstone rubble, but at the type locality 300 m northeast there is slumped tillite with sandstone rafts, and locally greyish red and greenish grey shaly siltstone and claystone beds.

HATHERTON SANDSTONE

Steep slopes and bluffs of sandstone about 150 m thick.

SECTION E7 - HASKELL RIDGE

Section measured up ridge on south side of mouth of Misthound Cirque, Haskell Ridge, beginning at top of Hatherton Sandstone. Base is 9.3 km at 354° from Mt. Ellis. Measured with staff and level by RAA PJB 1/71. Position of base 79° 47.0' S; 156° 11' E. Map elevation 1650 m.

Unit	A	B
Dolerite sill, 50+ m thick, to top of promontory.		
<u>MISTHOUND COAL MEASURES (138+ m)</u>		
7 Scree, mainly dolerite but with dark grey shaly to papery carbonaceous siltstone in between. Outcrop of siltstone from 3.7 to 4.2 m and of grey (w/white) sandstone from 17 to 22 m. Sample 23146 22 m Sandstone.	25.0	138.3
6 Sandstone, white (w/same and moderate yellowish brown [10YR 5/4]), very thin-bedded, massive. Trough cross-bedding.	1.6	113.3
5 Scree, mainly dolerite with some dark shale in between.	11.7	111.7
4 Siltstone, medium grey to black (w/same), coarse, shaly to papery. Coal in scree at top of unit.	8.0	100.0
3 Scree, mainly dolerite.	6.0	92.0
2 Siltstone, dark grey to black (w/same), shaly to papery. Coal from 80.8 to 80.9 and from 84.5 to 86.0 m.	6.6	86.0
1 Sandstone, white to yellowish grey [5Y 8/1] (w/same, light brown [5YR 6/4] and greyish orange [10YR 7/4]), fine, laminated to very thin-bedded, mainly massive. Layer of clasts mostly 2 to 10 cm but up to 50 cm across at base. Mainly granite and white quartz, with acid volcanics, sandstone, quartzite and schist. Pebbles and coal streaks and a few garnet sand laminae extend through lower 1.5 m. Also scattered concretions mostly 2 but up to 4 cm (w/dark yellowish orange [10YR 6/6] and moderate reddish brown [10R 4/6]). Parallel and low angle carbonaceous laminae with scattered shale fragments and white and grey quartz pebbles mostly 1 cm but up to 4 cm across from 3.4 to 3.6 m. Quartz pebbles also found at 28.5 and 59.5 m. Dark grey pebble 20 cm across at 59.5 m. Coal streaks and abundant stems from 6.5 to 6.6 m. Laminae of carbonaceous shale fragments up to 30 cm long from 12 to 16 m. Beds from 23 to 31 m contain coal streaks, stems, carbonaceous fragments up to 15 cm across. Beds and lenses of medium to dark grey (w/same and light olive grey [5Y 6/1] very fine shaly to papery micaceous sandstone from 27.7 to 28.1, 37.5 to 38.3 (where there are stems and <u>Gangamopteris</u> leaves) and 67.0 to 68.2 m. Coal occurs from 68.2 to 68.5 m. Sample 23145 38.0 m Sandstone with <u>Gangamopteris</u> . 23144 5.4 m Sandstone.	79.4	79.4

- erosion surface -

DARWIN TILLITE (46 m)

4 Sandstone (tillite), like unit 2, but pebbles seem less common. Mainly granite and schist less than 5 cm across, but a granite boulder 1.1 m across was found at 7.0 m. A count of 58 pebbles in the upper m gave granite (13), quartz (21), sandstone (9), acid volcanics (9), schist (6), where clasts are much more common. Scattered ferruginous bodies 0.5 x 2 m, olive black [5Y 2/1] in middle and getting lighter toward margin. They commonly enclose one or more dark yellowish orange [10YR 6/6] concretions 3 cm across. Thin carbonaceous bed at 6.9 m. Sample 23143 14 m Pebbles from upper 0.7 m.	14.4	45.8
- erosion surface with grooves 50 cm wide and 15 cm deep striking at 109°, and filled with shaly laminated medium dark grey siltstone and very fine sandstone -		

Unit	A	B
<p>3 Sandstone (water-sorted tillite), greyish yellow green [5GY 7/2], yellowish grey [5Y 7/2] and medium grey (w/same, greyish olive [10Y 4/2], dark reddish brown [10R 3/4] and greenish grey [5GY 6/1], fine, thin-bedded to unbedded, shaly to slabby. Pebbles mainly quartz 1 cm across but a few granite up to 4 cm. Slumped lens of white sandstone 0.8 m thick at 3.0 m dips 50° to 173°. A bed of moderate yellow {5Y 7/6} (w/dusky yellow brown [10YR 2/2]) concretion 8 x 20 cm across at 3.2 m. Above 3.2 m strata dip 50° to 173° and are broken up by folding, slumping and small scale faulting. Carbonaceous laminae occur throughout unit but especially above 6.5 m. At 8.0 m a fold axis and lineations on a sandstone surface strike at 95°. At 9.1 m strata dip 44° to 27°.</p> <p style="text-align: center;">- gradational contact -</p>	9.1	31.4
<p>2 Sandstone (tillite), medium light grey (w/greenish grey [5GY 6/1]), fine and poorly sorted, unbedded, massive to shaly. Scattered clasts of granite mostly 1 to 2 cm but up to 15 cm, metasediment up to 10 cm, white rounded vein quartz up to 5 cm, greenish grey fine sandstone mostly 2 to 4 but up to 15 cm, and white acid volcanics 2 to 4 cm. Fine striae 1 to 2 mm across and 1 mm deep on surface covered by thin carbonaceous siltstone. Strike 158°. Concentration of granitic boulders up to 40 cm across at 8.0 m.</p> <p>Sample 23142 3.9 m Siltstone.</p>	12.3	22.3
<p>1 Moraine covered platform. Pond of ice 30 m across at 10 m.</p> <p><u>DARWIN TILLITE</u> (46 m)</p> <p>About 300 m of fine white (w/moderate reddish brown [10R 4/6] and dusky brown [5YR 2/2]) sandstone of the Hatherton Sandstone.</p> <p>Sample 23141 -1.0 m Sandstone.</p> <p>Glacier ice.</p>	10.0	10.0

SECTION E8 - HASKELL RIDGE

Section measured up ridge east of Peak 2000 on south side of mouth of Misthound Cirque, Haskell Ridge. Base is 10.9 km due north of Mt. Ellis, and top is 11.2 km at 356° from Mt. Ellis. Ridge is capped by about 300 m of dolerite. Measured with staff and level by PJB GY (lower part) RAA SC (upper part) 1/71. Position of base 79° 46.1' S; 156° 24.5' E. Map elevation 1250 m.

Unit	A	B
Dolerite sills to top of ridge.		
<u>MISTHOUND COAL MEASURES (101+ m).</u>		
12 Dolerite scree, with debris of light greenish grey [5GY 8/1] platy fine sandstone and light olive grey [5Y 6/1] very fine sandstone and siltstone in lower slope.	7.0	100.8
11 Very fine sandstone and siltstone, light grey to black (w/same and a little light olive grey [5Y 5/2]), laminated, trough cross-bedded, papery to shaly and occasionally massive. Upper 0.7 m is massive very fine sandstone.	15.5	93.8
- gradational contact -		
10 Sandstone, like unit 8 (w/brownish grey [5YR 4/1]). Bluff-former.	1.2	78.3
- sharp contact -		
9 Sandstone, light grey (w/white and light brown [5YR 6/4]), fine to medium, indistinctly ripple-laminated but mainly unbedded, massive. Very thin carbonaceous laminae and abundant coal streaks up to 10 cm across. Above 4.0 m lenses of sandstone like units 8 and 10 (w/brownish grey [5YR 4/1]) up to 0.4 m thick and 2.0 m long. Sample 23139 0.6 m Sandstone.	7.8	77.1
- erosion surface -		
8 Sandstone, like unit 6.	0.6	69.3
7 Scree, with dolerite and sandstone debris. Medium grey to black (w/same) papery very fine sandstone and siltstone from 0.4 to 1.7 m.	4.7	68.7
6 Sandstone, light grey (w/dark yellowish brown [10YR 4/2]), fine laminated and trough cross-bedded, platy and massive. Bluff-former. Sample 23138 0.6 m Sandstone.	1.5	64.0
5 Scree, dolerite, with debris of fine sandstone and light to dark grey shaly siltstone to very fine sandstone. Dolerite sill, 30 m thick, overlying dyke which joins sill at this point of the section line.	9.9	62.5
4 Scree, dolerite.	2.0	52.6
3 Sandstone, white (w/same, yellowish grey [5Y 8/1] to light greenish grey [5GY 8/1]), fine, indistinctly laminated to unbedded, occasionally trough cross-bedded, massive. From 5.7 to 6.5 m a bed of medium to dark grey papery to shaly very fine sandstone and siltstone with white sandy laminae. Laminae of very fine sandstone and siltstone fragments (w/greenish grey [5G 6/1]) up to 10 cm from 11.5 to 13.0 m. Band of greenish grey siltstone fragments mostly 1 to 5 cm but up to 15 cm long at 13 m. Sample 23137 16.9 m Sandstone.	17.7	50.6
- gradational contact -		
2 Sandstone, white (w/like unit 1), fine, very thin-bedded to unbedded, massive. Few carbonaceous laminae. Lower 0.5 m contains scattered pebbles of white quartz (up to 2 cm), granite (1 to 2 cm) and light olive grey [5Y 5/2] siltstone mostly 1 to 2 cm but up to	21.0	32.9

10 cm across. Rare scattered concretions up to 1 cm across as in unit 1. Occasional stem impressions. Rare thin stringers of white and grey quartz pebbles, siltstone, granite and schist (up to 1 cm). Trough cross-bedding from 8 to 9 m. Rare coal streaks become more common above 10 m. Coal streaks and grey siltstone fragments up to 3 cm across from 10.7 to 11.0 m. Shaly, ripple laminated carbonaceous beds (w/light olive grey [5Y 6/1]) from 17.0 to 17.7 m and 18.5 to 19.2 m. Bluff former.

Sample 23136 19.5 m Sandstone.
23135 0.3 m Sandstone.

- sharp contact -

- 1 Sandstone, white (w/same, moderate reddish brown [10R 4/6], light brown [5YR 6/4] and pale to moderate yellowish brown [10YR 6/2-5/4]), fine, ripple-laminated and unbedded, blocky to massive. Carbonaceous laminae common. Pebble bands in lower 1.1 m and at base. Pebbles are mostly white quartz with occasional pink quartz (1 to 3 cm), schist (mostly 1 cm but up to 5 cm), granite (1 to 2 cm), sandstone and siltstone (mostly 1 cm but up to 5 cm) and acid volcanics (up to 4 cm). At the base pebbles are up to 20 cm across. Scattered round moderate yellow [5Y 7/6] concretions (w/dusky yellowish brown [10YR 2/2] and dark reddish brown [10R 3/4]) are up to 4 cm across in lower 1.1 m, and less common and no larger than 1 cm in rest of unit. Scattered pebbles mostly 1 cm but up to 15 cm across with lithologies as in lower 1.1 m but mainly granite from 1.1 to 2.4 m. A few scattered pebbles, mostly quartz (mostly 0.5 cm but up to 2 cm above 2.4 m. Pebble band at 4.3 m overlain by few medium grey siltstone fragments up to 2 cm across. Lens of small coal streaks, medium grey siltstone fragments up to 4 cm across and stem impressions up to 1 cm across from 5.4 to 6.5 m. Lens of medium grey to black (w/same and light olive grey [5Y 6/1]) shaly very fine sandstone with occasional stem impressions 2 to 3 cm across from 7.5 to 8.4 m. Upper 2 m becomes more distinctly parallel-laminated and finer grained with a greener weathering colour in upper m. Bluff former.

11.9 11.9

Sample 23134 1.5 m Sandstone.

MISTHOUND COAL MEASURES (101+ m)

- sharp contact -

DARWIN TILLITE (67 m)

- 6 Sandstone (tillite), medium dark grey (w/greenish grey [5GY 6/1] and light brown [5YR 6/4]), very fine to fine, unbedded, massive. Colour laminated in medium dark grey and light grey laminae (w/greenish grey [5GY 6/1] and lighter greenish grey [5GY 7/1]). Scattered pebbles and clasts of granite mostly 1 to 3 cm but up to 20 cm, quartz mica schist mostly 1 to 3 but up to 40 cm (some very coarsely foliated), white quartz up to 3 cm, rare pink quartz up to 1 cm, brown and grey quartzite, pale grey to white and brownish acid volcanics up to 6 cm, light olive grey and light greenish grey [5GY 8/1] sandstone up to 4 cm.
- Sample 23133 1.5 m Sandstone.
- 5 Scree, dolerite with debris of tillite (fine to very fine, white to greyish yellow green [5GY 7/2] sandstone) in lower scree slope. Also light olive grey [5Y 5/2] fine sandstone, pebbles (free and in sandstone) and blocks of Misthound sandstone.

5.6 67.0

49.0 61.4

Unit		A	B
4	Sandstone (tillite), white (w/same, yellowish brown [10YR 6/4], moderate reddish brown [10R 4/6] and greyish yellow green [5GY 7/2]), very fine to fine, very thin-bedded to unbedded, mainly massive, some platy. Scattered pebbles of granite mostly 1 to 2 but up to 8 cm, quartz mica schist mostly 1 to 3 but up to 5 cm), light greenish grey [5G 8/1] siltstone to very fine sandstone up to 5 cm, few pink and white quartz up to 1 cm, rare pale brown to grey quartzite up to 3 cm, and rare concretions up to 2 cm (w/moderate reddish brown [10R 4/6]). Sample 23132 0.8 m Sandstone.	6.0	12.4
- erosion surface -			
<u>Note:</u> Unit 4 fills a channel which cuts down through units 3, 2 and 1 to top of Hatherton Sandstone.			
3	Sandstone (tillite), greyish yellow green [5GY 7/2] (w/same, moderate olive brown [5Y 4/4], moderate reddish brown [10R 4/6], dark yellowish brown [10YR 3/2]), very fine to fine, unbedded, massive. Scattered pebbles of pink and white quartz up to 1 cm, sandstone like units 1 and 2, white sandstone up to 2 cm, granite mostly 1 to 2 cm but up to 10 cm, quartz mica schist mostly but 2 cm up to 12 cm. Also scattered dark yellowish orange concretions (w/dusky yellowish brown [10YR 2/2], and moderate reddish brown [10R 4/6], up to 4 cm long. Sample 23131 1.4 m Sandstone.	2.1	6.4
- poorly defined contact -			
2	Siltstone, with thin interbeds up to 8 cm thick of white fine to very fine sandstone. Siltstone is yellowish grey [5Y 8/1] (w/yellowish grey to light olive grey [5Y 7/2-5/2], pale olive [10Y 6/2], and greenish grey [5GY 6/1]), laminated to very thin-bedded, papery to shaly. Sandstone is massive. Sandstone contains occasional pebbles up to 5 cm across as in unit 1. - erosion surface -	1.8	4.3
1	Sandstone, white (w/same and yellowish grey [5Y 8/1]), fine to very fine, interbedded with siltstone, yellowish grey [5Y 8/1] to light greenish grey [5GY 8/1] (w/same and greenish grey [5GY 6/1]), laminated to very thin bedded, papery to shaly to platy. Thicker sandstone beds are massive. Wavy bedding with a relief of 0.7 m. Upper 1.0 m encloses subangular to rounded pebbles of very fine to fine sandstone and siltstone (w/light olive grey [5Y 5/2], greyish olive [10Y 4/2] up to 4 cm across; a few white and moderate orange pink [5YR 8/4] sandstone 0.5 to 1.0 cm across; quartz mica schist mostly 1 to 4 cm but up to 10 cm across, and rare granite 1 to 2 cm across. White sandstone is similar to underlying Hatherton sandstone. Sample 23130 1.2 m Sandstone.	2.5	2.5
<u>DARWIN TILLITE</u> (67 m).			
- erosion surface -			
<u>HATHERTON SANDSTONE</u> (264+ m)			
3	Sandstone, white, fine massive. Bluff-former.	4.	264.0
2	Scree, mainly dolerite. Section continued about 150 m to west.	50.	260.0
1	Sandstone, white (w/same, yellowish grey [5Y 7/2], light brown [5YR 6/4], and moderate reddish brown [10R 4/6]), fine, laminated to very thin-bedded, mainly massive but locally flaggy to slabby. Mainly parallel bedding but some low angle planar cross-bedding. Trough cross-beds 0.2 m thick with straight	210.	210.0

ripple marks forming upper surface of set (crests 0.5 to 2 m apart) every 5 to 10 m.

Vertical and horizontal burrows 0.5 cm across and up to 0.5 m long common. Beaconites was seen every 10 to 20 m in places associated with structureless burrows. Straight vertical tubes 1 cm across and up to 1 m long especially abundant from 19 to 21 m and scattered at several intervals above this. By 70 m vertical burrows are rare, but poorly developed horizontal burrows are still quite common.

Ferruginous (w/moderate reddish brown) sandstone beds 0.1 m thick at 49.3, 65.4 and 74.8 m, and bands and patches of finely spotted greenish sandstone occur every 5 to 10 m from 80 to 140 m.

Sample 23129	209.7 m	Sandstone.
23128	180.0 m	Sandstone.
23127	151.4 m	Sandstone.
23126	125.2 m	Ferruginous sandstone.
23125	120.1 m	Sandstone.
23124	90.7 m	Sandstone.
23123	60.0 m	Sandstone.
23122	29.7 m	Sandstone.
23121	1.2 m	Sandstone.

HATHERTON SANDSTONE (264+ m)

Scree of sandstone blocks for about 30 m.

Glacier ice and moraine.

