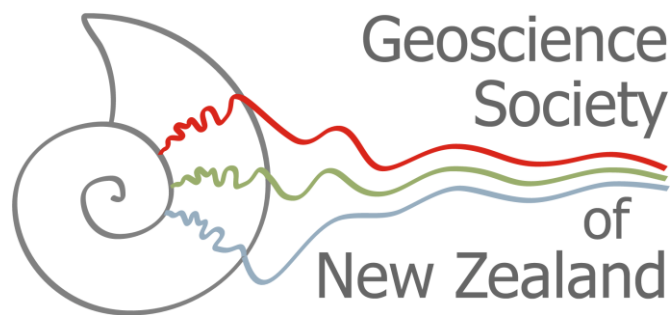


James Hector in Northland, 1865-1866

Rowan Burns & Simon Nathan



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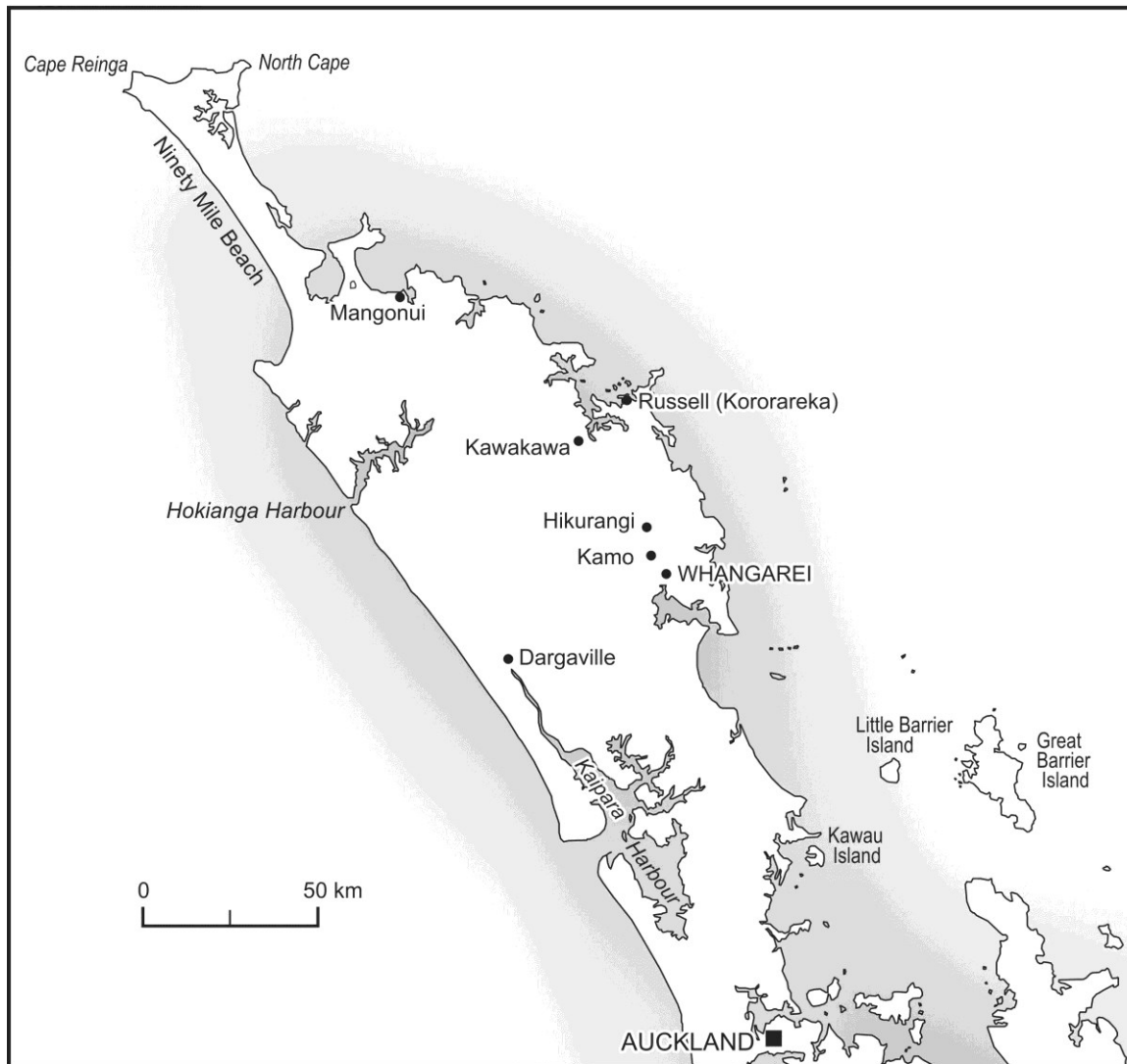


Figure 1: Sketch map of Northland, showing the main localities mentioned in the text.

James Hector in Northland, 1865-1866

Introduction

James Hector (1834-1907) was appointed the first Director of the New Zealand Geological Survey and Colonial Museum on 1st April 1865. His main job was to undertake a geological survey of the colony and to advise the government on the location and development of mineral deposits. Politicians had great hopes that Hector's appointment would lead to the discovery of gold, coal and other minerals.

His first field assignment in the summer months of 1865-66 was to undertake geological exploration of Northland, looking in detail at the coal seams already known at Kamo near Whangarei and at Kawakawa. Because coal had to be imported from Australia at considerable expense, the government gave high priority to the search for workable coal seams, and the Auckland Provincial Council agreed to pay half the costs of the survey. Hector was keen to undertake fieldwork in Northland because there was little information available on the geology of the region.

This report gives a picture of the Northland trip, as seen through correspondence between the field party and staff at the museum in Wellington. Although Hector's main concern was the field survey, he was also concerned with progress in the Museum, and these letters provide a unique insight into issues that arose around the time that the museum was opened.

Hector had only a small staff in 1865, all of whom who had transferred with him from Dunedin to Wellington: Richard Gore (clerk and meteorological observer), John Buchanan (draftsman and botanist), William Skey (chemist) and W. Rayer (museum assistant and messenger). The Colonial Museum was still under construction. Hector decided to take Buchanan with him to Northland as a field assistant, and arranged for Walter Mantell MP to look after the Wellington staff and supervise completion of the museum building. Mantell had wide-ranging scientific interests, having travelled widely around the country and collected moa bones from several localities which he had forwarded to England for description and identification. He was left to arrange the first displays when the Colonial Museum opened its doors in December 1865.

Hector and Buchanan travelled by boat to Auckland via Nelson. After a short stay in Auckland, they caught a steamer to Whangarei, where Hector hired horses and employed Henry Mair, fluent in Maori, as another field assistant. After examining the geology and coal mines around Whangarei in detail, the small party spent the next three months exploring and mapping the area to the north.

Hector had finished his fieldwork in Northland by the middle of March 1866, but was then invited to join the Governor, Sir George Grey, on two trips: firstly to Tauranga and the volcanic region, and then later to Kawhia, with a visit to Sir George Grey's residence at Kawau Island in between. They travelled on ss *Eclipse*, and after leaving Kawhia returned to Wellington, arriving on 17 May 1866. Hector had been away for six months.

Arrangement and sources of the documents

The letters and other documents are presented in four sections:

- Part 1 is a journal kept by Hector from his departure on 19 November 1865 until 7 December 1865
- Part 2 is a sequence of letters written by Hector and Buchanan relating their experiences in Northland. Buchanan's letters are particularly interesting because they present a less optimistic view than that of Hector. Buchanan, who was 15 years older than Hector, found the trip hot and tiring, and was not impressed with local Maori. He was also frustrated by his inability to find new species of plants – the region had already been thoroughly botanised by William Colenso.
- Part 3 is a sequence of letters from Mantell and Gore detailing events in Wellington, including the opening of the Colonial Museum and its first burglary a few weeks later.
- Part 4 deals with events relating to Northland after Hector's return to Wellington in April 1866.

The journal covering the first three weeks of the trip is held at GNS Science, Lower Hutt. The letters are held in two archives:

- (a) The Mantell family collection in the Alexander Turnbull Library, which contains letters written by Hector to Mantell
- (b) Te Papa archives, which contains some letters written by Hector and Buchanan as well as letters received by Hector and brought back to Wellington.

Rowan Burns is responsible for the primary transcriptions of most letters, but we both checked and discussed every letter. Those words that we were not able to decipher are shown by dashes (-----), and words we are not certain about are shown by [?]. We have generally retained the original spelling and punctuation unless an error is obvious, such as a word repeated or a stop missed out. In a few places we have added paragraph breaks rather than having a huge chunk of unbroken text.

Acknowledgments

We are most grateful to David Colquhoun (Alexander Turnbull Library), Jennifer Twist (Te Papa archives) and Maggie Dyer and Kristin Garbutt (GNS Science) for their help in locating and copying documents, and for permission to publish the transcripts. Carolyn Hume drafted the map of Northland (Fig. 1), and Archives New Zealand gave permission to reproduce Hector's geological map (Fig. 2).

We are grateful to four colleagues who generously shared their knowledge of the places that Hector visited, which allowed us to add footnotes identifying some of the features mentioned in the journal and letters. Mike Johnston advised us on the Nelson region, and Steve Edbrooke, Mike Isaac and Bruce Hayward made many suggestions about parts of the Northland region.

Chronology of Hector's travels, November 1865 to May 1866

1865

19 November: Left Wellington on *Phoebe*

20 November: Arrived in Nelson. Examine local geology

23 November. By sea from Nelson to Auckland with brief stop in New Plymouth

24 November: Berthed in Manukau Harbour, travelled to Auckland

25 November: Depart for Whangarei on the *Tasmanian Maid*

26 November: Arrived in Whangarei

27 November – 7 December: Detailed examination of area around Whangarei

8 December: Started to travel northwards by horse.

25 - 28 December: Spent Christmas period around Russell and Paihia

1866

2 January: Travelled northwards by horse

14 January: In Mangonui – due to leave for North Cape

5 February: In Hokianga

13 March: Back in Whangarei

18 March: In Auckland – due to leave for Coromandel

22 March: In Auckland. About to leave for Tauranga with Governor Grey

11 April: On Kawau Island. About to start for Kawhia with Governor Grey

17 May: Arrived back in Wellington on ss *Eclipse*

Part 1: Journal of the first part of the Northland trip

Hector often kept a journal on longer trips in addition to his field notebooks. During the day he wrote in the notebooks, often in pencil, but the journals were written up at night or in spare time. This journal is written in a foolscap exercise book with cardboard covers. Hector wrote on the right-hand pages in ink, with sketches on the facing pages.

Although written in ink, the journal is challenging to read – more so than most of the letters we transcribed – and there are many words (and some sentences) that we were unable to decipher. It appears that Hector was writing at speed, and probably assumed that the journal was for his eyes alone. Here is a sample of the writing, from the entry of 30 November 1865:

Nov. 30. 'Continued along the N. shore of the harbour. The ~~first~~ ^{first} Sandstone appears on the N. side of Morris Pt. Bay is shown in the section. They pass into a grey granite & are suddenly cut off by being set on a dip of 22° to NE by a dyke of black olivine Basalt of great density which cuts them in a NNW. line. This dyke forms a rough boundary between the granite to the N. & the sea. On the N. side of the dyke is the green ~~Alphonsine~~ ^{Alphonsine} slate with small veins (Strike ENE dip 50° S. Dipping on the edge of the slate found a few small boulders of chromite and granitic (?) with some mica. — The fact is probable that this is not a basalt, but a granite, from the dark, fine texture, even if it be a granite it may not indicate the presence of crystalline rocks in situ. The dyke is to the W. side of the dyke contains fragments of the green slate. The dyke is therefore older than the Sandstone.

Like most of the journals that Hector started, this one is incomplete. He kept it up for three weeks, covering the time he spent making a detailed examination of the coal seams and geology around Whangarei, but there are no entries once they started to move further north.

Wellington, Sunday November 19 1865

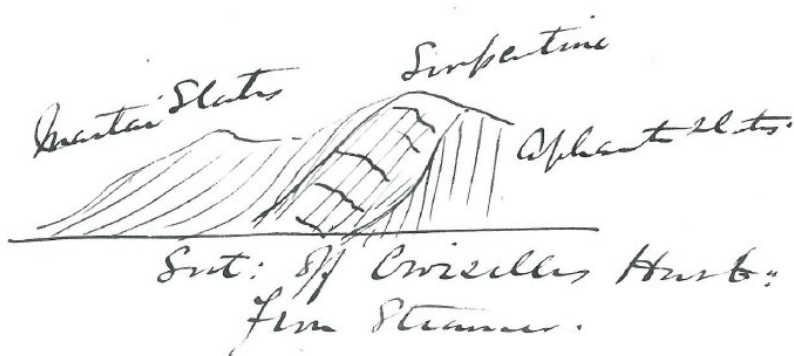
Leave by the *Phoebe* at 2p.m. accd. by Buchanan for Auckland. Pass through the Tory Channel & reach Picton after it is dark at 8.30.

Note the absence of any beach on the South side of the straits as compared with the Wellington shore when even in most exposed situations such as Capes Terewiti [sic] & Sinclair, this is a shingle beach, while on the bold shore of a similar character on the South side of the straits the sea washes right to the cliffs.

This is no doubt partly due to the set of currents but also in a great degree to the continual subsidence of the coast here which is taking place in the N. of the Middle Is. while the Wellington promontory seems to be undergoing elevation (For details & proofs see notes on the Coast in the vicinity of Wellington). The surface denudation has given a soft furrowed outline to the hills, like the two leading spurs of the Gold Fields. This only proves the softness of the rock, from its fissile structure & not from its actual softness of material. There are not however such marked signs of rapid vertical erosion as at Cape Terewiti & the mouth of the Karori Valley. Since June 1864 there has been very little change in the size of Picton as compared with the usual rate of Col. Colonial progress [?], but the future town is now marked out by a few blocks of houses over a much larger area than at the date of my previous visit.

Mon. Nov. 20

We left Picton during the night & by 6 a.m. we reached the French Pass through which we shoot with the tide in our favour. D'Urville Is. is called Rangototto¹ by the Natives & the Bishop of Nelson² told me that it means "Morning Sky" & not any reference to Volcanic sky of blood. In coasting Southwards along the E. side of Blind Bay, the Aphanite slates, Maitai slates & dark coloured intrusive rocks of of [sic] Serpentinous character in all probabillity are seen as in sects. – The serpentine is either coal black or weathered to a bright red, the aphanite slates weather into a sharpe [?] red grey & the Maitai slates into a buff grey.



Reach Nelson at 11.30. Rather difficult & clumsy work to come alongside the jetty.

During the Aft. Ride out to the N. end of the Boulder beach.

¹ Rangitoto

² Bishop Edmund Hobhouse (1817-1904), first Anglican Bishop of Nelson

Road cuttings through beds of stratified shingle, consisting of fragments of slate mixed with clay³. Beyond Mr. Wells' Farm⁴ there are large angular blocks of Basalt resting on a terrace about 80 to 100 ft. above the sea level. This is derived from a dyke that throws up brown sandstones containing plant impressions. These sandstones also form large boulders some portions of them being highly indurated. The sandstone is in places micaceous, & contains graphite in streaks, along with obscure plant impressions⁵.

Nelson

The low hills which bound the bay are covered with Fern & Manuka scrub & I observed that the points of the spurs were all scarped in the same manner as those round Wellington harbour.

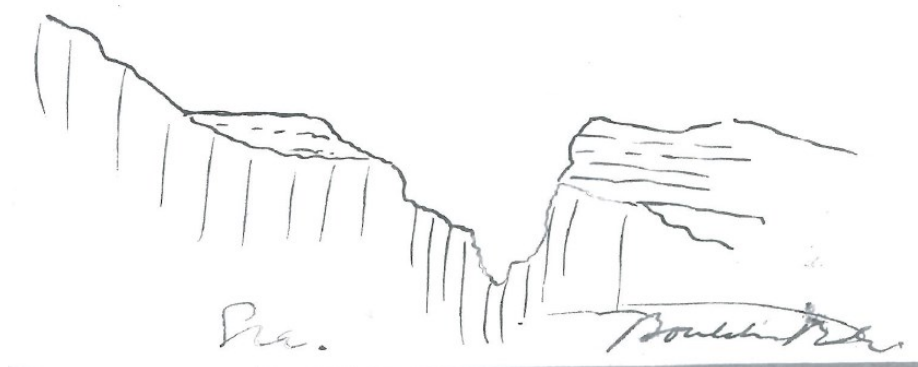
The portion of the Coast that is protected by the boulder Bank from the sea, forms a succession of bays [?] & on the points which separate these gravel beds resting on clay deposits are exposed.

About 3 miles N. of Nelson on the road side there is a quarry opened into a dyke of a peculiar kind of Feldstone⁶ which I have only met with previously in Dusky Bay.
Porph: Feldspar

It is of a Greenish white colour with irregular crystals (?) of a dark blue Col. It splinters like Pitch stone so that it is difficult to get a fragment sufficiently large from a specimen without being a natural change which has invariably a flowery surface.

This Quarry has in consequence of this circumstance the appearance of a Chalk pit from the road. It supplies excellent road metal. This dyke rock can be traced in the surface by the very poor soil which it gives rise to covered with Linum, Discaria, Coprosma & Manuka.

At the North end of the Boulder Bank a creek⁷ marks the junction of the old cemented gravels & the slates (see other side).



³ Port Hills Gravel formation

⁴ William Wells (1810-93), a leading citizen of Nelson, who wrote several papers on geological topics

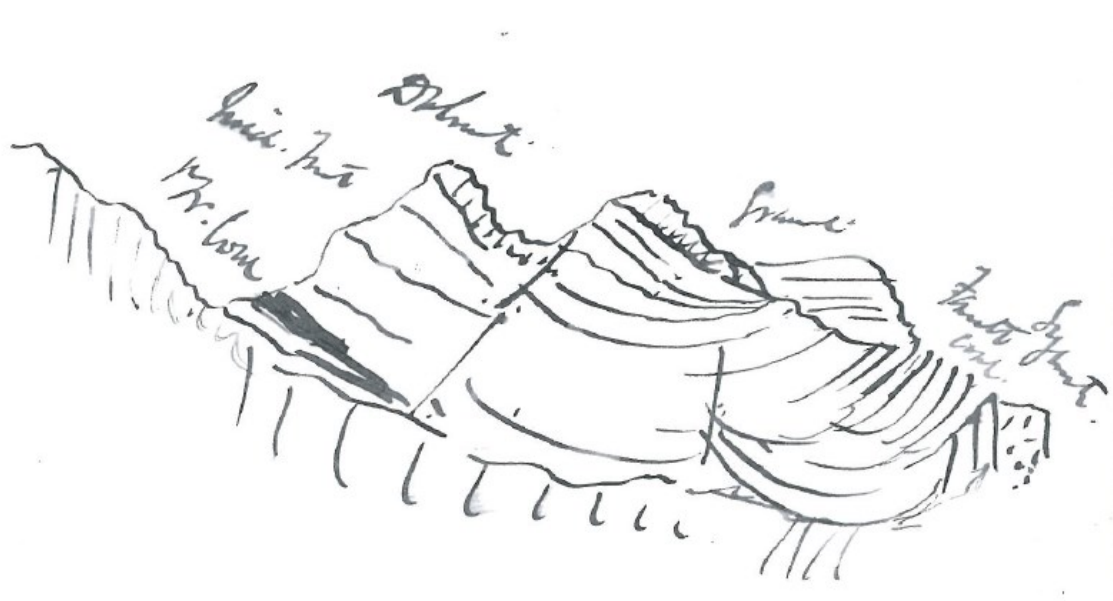
⁵ These plant fossils are now known to be Jurassic

⁶ Almost certainly the quarry at the entrance to Todd's valley

⁷ Waihi Creek

So that it is probable that a great deal of the shingle in the bank is derived from the older deposit.

The rock is a bright green diorite slate passing into feldstone occasionally. It contains veins of Quartz, Feldstone & Carb. of Lime with green earthy chlorite. It wears away with great facility for though hard it splinters easily. This rock prevails as high precipitous cliffs for 1 mile nearly to Boulder Point where there is a dyke of syenite⁸ of a green colour containing crystals of bronze mica. It appears to be the wall of a Feldstone dyke & is therefore a true metamorphic rock found on a line of fault. This helps to clear up the phenomenon of the B. Bank. The strike of the Fault is N by E Mag.



21st

With Mr. Wells [?] ride out the Waimea Plain by Richmond. The road at first crosses the Port Hills which appear to be Tertiary strata and Basalt capping them. In the rivers to the E. that descend from the Dun Mt. range are Br. Coal Depts. (Jenkins Coal Mine). It is therefore the ordinary section of Middle Tert. & Dolerite ----.

The Hills that bound the Waimea Plain on the East have a lone [?] range in the foreground & in general appearance have a very striking resemblance to the Kaihiku Mts. S. of the Molyneux in Otago which are the Lower Secondary. This is borne out by the discovery of both Fossil plants & shells of Trias. in a dark arenaceous sandstone.

The Waimea Plain is of consolidated shingle cut by channels & water courses. The soil on the higher terraces is therefore the worst, being thin & stoney like the basin plains in the South. The lower flats are very good however. The structure of the Plain consisting of river deposited shingle is well seen at the Waiwi⁹ what is depressed 40 ft.

⁸ Cable granodiorite

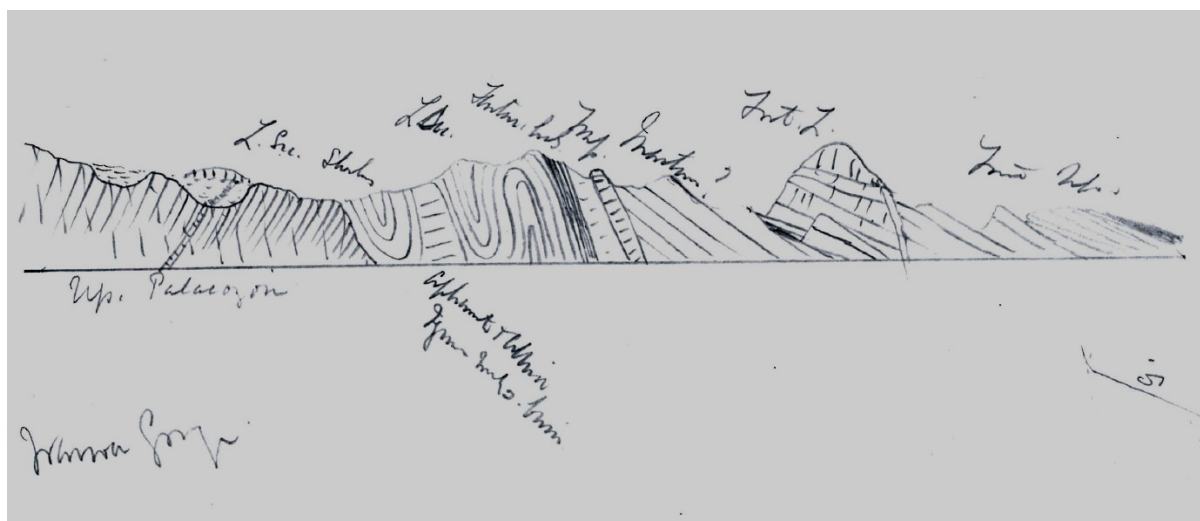
⁹ Wai-iti

16 miles from town after crossing the Waiwi bridge¹⁰ turn off to the Wairoa gorge which comes out of the Mts. from the Eastward. There is a marked Bay in the hills at this place so that the lower range of secondary rocks is wanting. The first rock therefore which was seen in ascending the hill, when the shingle ceased was.

Dark Blue indurated strata with quartz veins¹¹. Nearly vertical & strike N 40° E. They are exactly like the strata (also vertical) between the Nuggets & Catlins River, which contain *Modiola*¹², ammonites &c.

A few hundred yards up the river the shale pass into greywacke conglomerate¹³ having dip. <65° to E.

The shale-breccia rock indurated shale meliphyic [?] conglomerate, loose [?] sandy shales. It is altogether just like the section up the Waiora at Coromandel or up the Von river or Papatura [?] gorge. Vertical denudation has been very extensive [?] in the gorge, there being true rock terraces up to 50 ft above the river level. It is curious that on the steep slope at higher level there are no signs of terraces.



Follow up the gorge to a new stream saw mill. The bush only rises up the gullies a certain distance & the margin in scrubby often at a very low alt. Birch, Remu & White Pine. The latter is the principal timber. A hard firm variety of it is called Silver Pine, but this appears to be a diff. tree. The bark is light grey & smooth, & the foliage is tuftty & light green.

Hot dusty ride back to town – at 7p.m. The sport [?] wind has been blowing all day. It is a dry wind that comes over the Mts. from the SW. It is the true SW wind of the West Coast only dried by the shape of the country (Does it deposit at Hokitika?) Failed to get specimens of the the Richmond fossils or of the vegetable & graphitic impressions.

¹⁰ From the description, this must be the bridge over the Wairoa River

¹¹ Garden Formation of the Richmond Group

¹² This is presumably the genus now called *Modiolus*, a mussel.

¹³ Heslington Conglomerate

Nov. 22nd

I spend the forenoon in the Museum examining the specimens there. In the aft. start in the *Phoebe* for Auckland.

23rd

Sight land at 10 a.m. The gentle & uniform slope round Mt. Egmont is very singular when considered in counter with the very low sea scarp. If it is the result [?] of a slow rise of the land there should be signs of scarps back from the present coast & especially in the valley of streams. On the other hand it is much like gradual subsides [?], the scarp being caused by the continual removal of the shore!

Got a view of the outter sugar loaf which consists first of horizontal beds of breccia rock and sandstone cut by a dyke which has a slight dip to W. This dyke consists of small sheets of columnar Basalt, two columns being horizontal.

The other Islands are Trachyte very irregular in bedding [?].

Taranaki

Anchor at 1.30, go ashore & visit the Supt. about the Petroleum to ---- only a film on the surface of the pools in the Trachytic rock of the Point. He tells me that Gold has been found in the black sand 25 miles up the Coast.

See the landing machinery in the surf boats for a mile, very difficult work. Cargo is landed at 15 p. ton here & they say that only 25 days in the year that they cant land goods.

Nov. 24th

Very thick fog all night. Sail at 7. Got to be Manakau at 9 a.m. & to the wharf [?] at noon. Found a ox cart [?] waiting for me – sent by the Supt.

25th

Inspect the well that has been sunk at the Queen street mills. It was sunk through the Waitemata beds 200ft. with a 6 in. bore then 150 ft. with a 2 1/2 no tubing. Water at 100 ft. & then at 330.

A similar well has been sunk at the Gas works. At 98 ft water then rose to 20 ft. from the surface (sea level i.e.) 2000 gals. The comld. to 70ft. & at about 60 ft. they got 2000 gals. more [?] & no further supply. It is slightly saline.

350 – wet	100 150 –	98
	350	60

[*The following section was written by Buchanan*]

Forward specimens to Wellington No 1 to 9 –

25 Nov 65

Start at 11 pm for Wangarei in the “Tasmanian Maid”, the same small vessel in which I went to Coromandel in 1864 when she was called the “Sand Fly” – very crowded, with 37 passengers – no sleeping accommodation - carried number of horses on deck.

26 Sund.

After a curious night of it – off Cape Bream. Sail at daylight – As the steamer is supplied with the new Wangarei coal. It had one of three fires fed with Wangarei coal only – another with mixed NSW & Wangarei coal + a third with NSW coal alone. The Wangarei coal resembles that from Pakawau in appearance but the seam at present worked in the mine contains a band of iron shale with much sulphur which forms a bad slag, - it burns with a short clear flame, the flame having a white gaseous look as compared with the NSW coal, it seems however to give out a strong heat but requires about 1/3 more than the NSW coal to keep the fire in good order. Its greatest defect is decidedly the iron or clinker which is fluid when hot but sets into a hard slag that is difficult to disengage from the furnace bars.

Get a distant view of the land coasting along which appears to consist of wooded ridges that trend N & S – Bream tail however is the end of an E & W range¹⁴ which seems to run right across the country getting more irregular in outline till it terminates in the westward in a double topped cone – it is very similar in appearance to the long point range north of Tautauku Bay – passed inside the Hen & Chicken Islands which are very abrupt with sharp pinnacles on their highest points which gives them an extremely rugged outline, they are probably composed of slate rocks capped with trachytic breccia – By 9 am the time we reached Bream Hd near the entrance of Wangarei Harbour it cleared up fine and we had a splendid view of the rugged promontory and Islands which form a marked feature in this part of the coast. This promontory is formed of a group of hills 12 to 1500ft in height composed of some formation¹⁵ that weathers into fantastic outlines resembling figures. The seaward face of these hills enclosed with a brownish scrub down to the water's edge. As we enter the harbour passed near enough to the rocks to observe that they are highly disturbed sedimentary beds¹⁶ with intrusive rocks – these latter form smooth rounded islets barely rising above the water's edge.

Stopped to deliver a mail at the resident Magistrates where there is a pretty cluster of houses at the foot of the remarkable group of hills known as Manaia concerning which there is an often told Maori legend. The scenery here is very fine. The beauty is however confined to the lower part of Wangarei harbour: the upper part of it being flat and tame - As far as Limestone Island which is minutes from the Hds, the harbour the navigable for vessels of the largest size and at this place Graham's town has been fixed upon as the site of the Govt township of which a few lots have sold but none occupied. Above this point the river is narrow and tidal but the steamer goes up at high water for miles further. We arrived there at 11.30 – find great excitement among the population on account of the supposed discovery of

¹⁴ Brynderwyn hills.

¹⁵ Taurikura Subgroup volcanoclastic rock

¹⁶ Busby Head/Home Pt where Miocene dacite intrudes Cretaceous sandstone.

gold which however my inspection of the specimens did not confirm as they were nothing but small masses of iron pyrites embedded in blue quartz.

In the afternoon borrow a horse from Capt Gipps and ride out with Mr Walter to Maungatapere. The road leaves the township to the S. and follows up a valley that flows between a wooded range of slate hills¹⁷ on the right hand and tertiary limestone¹⁸ and shales on the left – This stream contains pebbles of Quartz and was the locality of the supposed gold discovery – After following this valley for three miles the road rises to the left thro' deep cuttings in white and red clay marls resting on greenish blue argillaceous sandstone,¹⁹ over the ledges of which one branch of the creek falls for about 60 ft: - these sandstones contain obscure Miocene tertiary fossils. The road then gains a sloping plateau of Bluestone or Dolerite frequently vesicular. This plateau evidently the surface of an old lava flow is one of several that radiate from Manu²⁰ hill a fine shaped volcanic Mtn that lay about 5 miles to the westward. None of these flow has any great breadth but combine to form a very extensive plateau with a gently sloping surface covered with a luxuriant growth of fern & Tu----- This plateau forms a striking contrast to the rugged slate hills to the N of Whangarei Harbour and the deeply furrowed barren clay lands formed by the tert: strata to the S. – Continuing to rise gently the surface of these lava flows pass thro' many old native cultivations which are easily recognised by the immense piles of stones that have been gathered into heaps in order to clear the surface and leave the deep rich mould unencumbered for their gardens.

The road leads thro' magnificent forests with patches of open farm land and we enjoyed the fine views up the Wangarei Hds. After passing over the highest part of the road (800ft) come in view of Mr Waltons farm which lies at the base of a dark conical hill²¹ about 600 ft above the plain, and after passing over a couple of miles of stony ground but with rich soil reached the paddocks which are surrounded with dykes or stone walls. The stones being gathered from the surface. Mr Walton has 500 acres of land cleared of fern and laid down in grass much of which is surface sown and on this he keeps 1500 leicester sheep besides a large number of horses and cattle. The view from his garden where he proposes to build his house is most extensive and is one of the finest pieces of lowland scenery I have seen in NZ; the mixture of open and bushland with an undulating surface and finely shaped wooded hills, being an unusual combination of features in the NZ landscape. In the garden which is at an altitude of [left blank] were some well grown pine trees, and hops, grapes and the tobacco plant appeared to thrive luxuriantly. It is a curious circumstance that the natural openings in the bush, which are occupied by fern land, are surrounded by well grown trees which appear to thrive equally as well with those in the forest and do not die as is usually the case around the margin of an artificial clearing. The occurrence of these stony clearings is a valuable feature in this district as not only does it save clearing the land of heavy timber but the stones can be gathered from the surface and built into a substantial and lasting fence for about 35s/- per chain which is the same cost as a post and rail fence.

Nov 27th

Rain which commenced during the night continued all day from the S.E. and as everything was enveloped in in thick fog did not venture out.

¹⁷ Pukenui hills.

¹⁸ Whangarei Limestone.

¹⁹ Ruatangata Sandstone

²⁰ Maunu hill.

²¹ Maungatapere (?)

[*Rest of the diary written by Hector*]
28 Nov.

After heavy rain all night it cleared up shortly after daylight for a short time, but again set in fog & rain, notwithstanding started at 10 returning to Whangarei. Examined the fall on the coast & got a few fossils out of the green sandstone. The strike of the beds is there NE. dip to SE.

Arrive in time to see them get up steam in about 40 minutes with the Whangarei Coal in the "Tasman maid." Spend the afternoon at the mines with Mr. Biddington.

They are situate about 3 1/4 mile to the N.W. of the town²² in the in a vally in the block of hills²³ the SE. face of which is slate but which terminates to the NW. in the volcanic & Doleritic rocks²⁴ of Manu. The tramway to connect the mine with the wharf is being constructed of wood, the rails of Rimu are 5x4 inches & cost 15/- p. 1,000 ft. The sleepers are mostly of Pourera²⁵ [?] & are placed close enough to carry Iron rails & steam traction if required.

The mine consists of a drive which enters the face of the hill from a narrow gully up which the tramway winds in a heavy cutting. The workshops are at the outlet of the gully. The length of the tramway from the wharf which is being built on the first bend of the river above the town with a depth of 8ft. at high water, is 196 chains to the works with a total rise of 270 ft. but a -----t hill is passed over of 298 ft. which requires for 10 chains a gradient of 1 in 17. This can be ob----- at any future time by an earth cutting.

From the workshops the side cutting in the confined vally with several bridges is 36 chains up to the screens with a further rise of 71 ft. To this point the tubs descend 80 ft. in 9 chains by an incline & Drawn from the mouth of the mine which is therefore 424 ft. above the sea level. A further rise of 240 ft. reaches the surface of a Trachyte Plateau that gradually leads back to the Horo-paki Hills.²⁶ This plateau is surrounded by an irregularly formed scarp along which the Coal has been detected in several of the gullies²⁷ which furrow it, but everywhere dipping under the Plateau the surface of which is 664 ft. above the sea.

This surface of the plateau is irregular & undulating & covd. with outcropping mass of igneous rock. There is a large clearing & a Native village upon it where the land is very rich & further hid in a deep hollow there is a secluded Lake²⁸ of a few acres extent, the shores of which are also of Igneous rock. To the N.W. two conical hills²⁹ like Maungatapere or Manu in appearance rise above the Trachydolerit flows which as they have the same elevation most probably belong to the same series most likely sub-----. The section is not unlike that at Saddle hill as the fault lies ---- down there.



²² Kamo.

²³ Pukenui hills.

²⁴ Kerikeri Group volcanics (L. Miocene – L. Quaternary).

²⁵ Probably Ouriri

²⁶ Hurupaki volcano.

²⁷ Present Kamo brickworks area.

²⁸ Lake Ora

²⁹ Scoria cones – Ngararatuna and Hurupaki.

The edge of the Plateau is undoubtedly a line of fault,³⁰ the probable direction of which is N by W.

The drive was 170 ft. long & as it follows the level floor it winds about a good deal on account of the section [?] of ----- or faults. The roof of the coal is a soft green sandstone containing marine shells³¹.

The Coal “crop” has been found in several of the gullies by Mr. Biddington & he says that is the lowest [?] point [?] & therefore as it will comd. the greatest quantity of coal is most suitable for opening up a mine. the coal mine in the face of the hill both to right & left of the “drive” [?] but from the fact that the drive itself has [?] to turn very much to the left to keep on the level f---- ----- that it is also dipping into the hill. The following points suggest these ideas for solution.

1. Does the Plateau cov. the centrall portion of what was an extensive basin?
2. What is the nature of the lip – is it a fault?
3. What are the marl [?] Formations in the basin.
4. What occurs between the containing rock & the Bluestone Cap.

It is only 8 months since the Coal was discovered but a great deal has been done & it is undoubtedly the best managed experimental work of the kind I have seen in the Colony. The Coal is used in the forge at the mine but does not answer well without admixture with N.S.W. Coal.

Wed. 29th Nov.

Engage a boat & crew of 3 Native to examine the harbour accompanied by Mr. Walter [?], Capt. Gipps, Mr. McDougal & Buchanan.

Start at 9.30 & pull down the Harbour to Limestone Island. It is about 100 acres in extent & has cliffs 50 to 70 ft. high with a shingle beach all round it. The cliffs afford good section of the Laminated [?] Limestone,³² often flaggy & generally impure, but with veins of Calc. spar.

At the N. End the head [?] dip 12° SE, the p----- strike [?] being N50°E. The bases of the Limestone beds pass into green sandstone & there is evidently a fault running N & South through the Island as the beds are repeated as in the section. Could find only very indistinct fossils, apparently of Plant stems. Shells are said to have been got at one time while quarrying this Limestone.

This as well will be a very important set some day in connection with the Harbour. The surface is covd. with sand but there is a good deal of grass land also. Water & a little beach [?] is found on the South side of the Island, where there is a ----- camping ground of the Natives. They had been there recently drying dog fish & blue tops [?] sharks 100s of which are found drying on poles.

³⁰ Probably the Kamo Fault.

³¹ Ruatangata Sandstone (greensand)

³² Mahurangi Limestone.

Among the bush on the Island that the *Pisonia sinclarii* was first found by Mr. Henry Mair.

From Limestone Is. we crossed to Onemama[?] of F----- Point on the South side of the Harbour. Here there is a steep cliff of grey or Buff sandstone³³ that weathers into a laminated structure. It consists of grains of Quartz & glauconite. It is finely jointed & lies in beds 40 to 60 ft. thick that are divided by a smooth grained brown stone in thin layers. No fossils could be discerned, but the general resemblance of this Strata to the F----- Point at Waikawa is very great. It is probably only a local deposit & gradation into clay shales in all directions. It underlies the Limestone Island beds.

The dip is apparently N.W. The Falls on the Mangatapu [?] road bear N300E. & the coal mine³⁴ N325°E from the top of the bluffs formed by this sandstone.

This stone could be quarried very favourably as there is deep water close alongside or within easy reach of a jetty. It weathers to a light grey colour. It breaks naturally into large blocks the edge of which seem to stand the weather very well. Measured as 12x6x2 ft.

Sail down the Harbour & at evening camp on the N. shore in a most beautiful spot where high slate hills ----- by deep gullies came down to the water edge.

The greater part of the N. shore is formed of slate rock (see Geol. map). They are of the following varieties. Arenaceous schist, Aphanite -----, Greywacke, blue clay slate in ---- bands, blue chert slate with Quartz veins, some of which contain M----- & Red Jasperoid slate. These latter form thick beds without any decided changes. This was the principal rock at our camp when it was of a chalky or blue colour & contained thin veins of Quartz which traversed it in all directions. In some respects it resembles some of the altered secondary rocks. Above the water level it is little more than a soft clay, so finely does it weather when subject to percolation. Rain during the night but had a pretty comfortable camp.

Thurs. 30th

Coasted along the N. shore of the harbour. The Sandstone³⁵ appears at the South side of Munroe Pt.³⁶ Bay as shown in the sections. They pass into a Grey Grit & are suddenly cut off having a dip of 22° to NE by a dyke of black olivine Basalt of great diversity [?] which cuts them in a NNW. line. This dyke forms a rough boulder point that juts out to the sea³⁷. On the East side of the dyke is the green Aphanite slate with Quartz veins (strike ENE dip 50°S) resting on the edge of the slate found a few small boulders [?] of decomposed red granite (?) with brown mica³⁸. It is probable that this is only a Trachyte, yet as some of the rocks are brecciated, even if it be a granite it may not indicate the presence of crystalline rocks in situ. The sandstone on the W. side of the dyke contained fragments of the green slates. The dyke is therefore older than the Sandstone.

³³ Onemama Formation.

³⁴ No coal measures known on South side of harbour.

³⁵ Ruatangata Sandstone.

³⁶ Reserve Point.

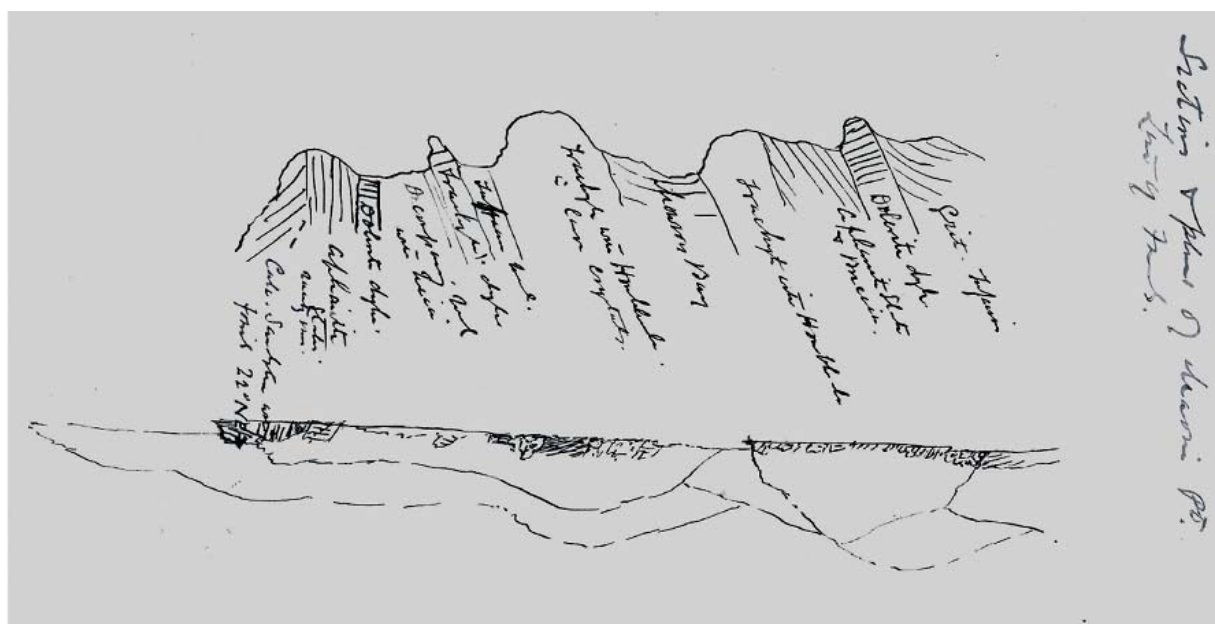
³⁷ Now known to be a nephelinite lava flow within the late Miocene sequence.

³⁸ Now known to be an early Miocene dacite

South side of Monroes Bay the Trachyte contains large crystals of hornblende. It is intruded [?] by a light col. rock that contains mica and is probably the granite (?) of above. A p---ing -- ----- form of sandstone containing fossils (see list) to dip 22° NE.

Walk round the shore to the base of Manaia Pass a ---- laminated Trachyte of a light colour. The laminae are on edge & have a yellow white colour. they are arrayed concentrically so that they weather into a very ----- arrangement on the beach. This is intruded [?] by the green trachyte again, on the beach, but in the hill there is a quarry opened at a soft yellow trachytic rock containing crystalline plates of brown mica.

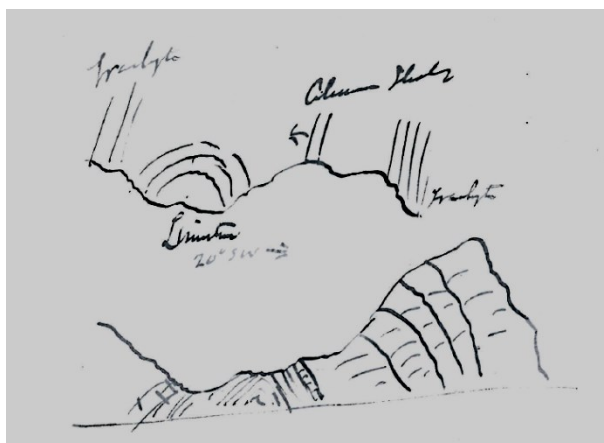
The whole of this district is evidently much disturbed country of a centre of eruption of early volcanic rock³⁹. Mostly ----- It resembles the strikes of Banks & Otago Peninsula, excepting the absence [?] of the highly fossiliferous strata which are there inter----- with the Igneous rocks. With the cursory survey I was able to make it is impossible [?] to ----- & show in detail all the various changes which occur in the strata, & the attempt I have made to do so is shown in the accompanying map & sections.



While walking round the beach the boat had proceeded to the base of little Manaia⁴⁰ hill where we rested for dinner at a place where there was supposed to be coal. The coal is only al---- tuffa containing Palagonite. & Iron [?] portions. It is a ----- overlying the Limestone which are seen on the beach. See note.

³⁹ Subvolcanic intrusions of early Miocene Taurikura Subgroup andesite into sandstone

⁴⁰ Mt Aubrey.



Ascended to the top of the Hill⁴¹ (By Bar. 693 ft.). It is a steep rugged climb at first through Manaka – the steep passing slope & last of all nearly perpendicular masses of rock like battlements have to be scaled. The view magnificent & the elevation is so abrupt above the harbour that all the various channels & shoals were visible as if drawn on a chart. The Manaia group of hills are evidently the highest in the district for even from this elevation the country to the N of the Harbour which from the boat appears as if rugged & hilly is seen to be only gently undulating with no great elevation. The Manaia hills have every appearance of being the remains of a centre of eruption of ----- Trachytes at the close of the Miocene period, being formed of the tertiary rocks preserved from denudation by the massive dyke by which they were traversed & by the large accumulate of Volcanic conglomerates⁴². The soil is very varied, some of it where derived from the Serpentine beds being quite red while other parts where derived from the tertiary beds or from the A----- Trachytes is of a white glistening character.

The top of the hill which consists of great bunches [?] of Trachyte & breccia, has been strongly fortified by the Maoris & the quantities of edible shells scattered in t---- much of the Mt. ---- is most incredible & yet there is not much room on the top of the hill for a permanent Pa as a residence, so that it was probably a place of refuge in times of danger.

Sail up the Harb. with the flood & land a short distance above the part where we encamped the night before & walked from there as far as a Maori village where there were a few natives. We passed through several large villages which were quite deserted. ----- within a very few years there must have been at least 10 times the number of natives round the harbour as now.

The village we visited lies very ----- in a sloping ----- up which the the ----- towards a conical Hill.⁴³ This part of the shore is formed of the Jasperoid [?] & Greywacke stratas [?]. The latter being small Quartz veins containing Iron Pyrites which was thought to be Gold.

After buying some Potatoes from the Maoris & sending them pitching into a horrid mess of boiled [?] corn [?] pulled over to Graham's Point⁴⁴ where the Township is laid off. It

⁴¹ Mt Aubrey.

⁴² Eruptive centres of Taurikura Volcanics andesite.

⁴³ Rangitehi[?] hill.

⁴⁴ Onerahi[?].

is composed of Limestone crossed in part with Dolerite & Tuffa beds⁴⁵. Coal fire & potatoes in a Maori oven. This is a beautiful site for a town & has a large fr---- to very deep water. It is a level bank [?] of land about 60 ft. above the sea level & intersected by sand [?] ----- that rise in springs.

Decr. 2 Sat.

----- at the mouth of the Otaika cr. where there is a reef of decayed slate ----- out of a terraced ----- vally to the N. & ----- by a ----- on the South it probably rises from under the green [?] sandstone of Onemama Point.

Get back to Whangarei at 11 am.

List of specimens

(See note book)

Sunday 3 Decr.

Ride out with Taylor to Otaika. In afternoon [?] go up the gorge of the cr. leading to the coal mines – first ascending the hill behind the town which is 600 ft. high & finely textured. Then descend a sharp leading spur but find no rock cropping out till the creek is again reached. Then Basalt alone [?] is seen belonging to the Formation of the Whangarei vally. Follow up the stream to the coal mine. on the left side (ascending) the Crystalline Limestone⁴⁶ seen to crop out in the side of a high hill. This is a very peculiar feature (See Sect. & Plan).

Above this opp. to Biddington Ho. the stream rushes through a ---- gorge in which it cuts right through a stream of Grey Trachyte that breaks up into Massive Cubes. The picture of the course of the stream is very beautiful, the trees almost meet overhead & the steep banks are covered with a beautiful variety of ferns. Above this gorge the vally of the stream expands greatly & bends [?] in several wide valleys that lie between the junction of the slate & the Trachyte. All ----- on this slate the coal is found dipping in the opposite direction. There must be a line of fault in the direction of the Vally under the Trachydolerite planes unless we are to assume such a discrepancy between the ages of the coal & the Limestone as that the latter could have been deposited in a vally erroded after the other was formed &c. &c.

Sunday Decr. 3.

Ride with Taylor to Otaika where he has a very nice farm, with a good deal laid down in English grass.

In rising [?] from the S. branch of the Whangarei [?] stream the land is a poor clay covd. with *Dracophyllum*, *Manaka*, & *gleichenia*. It slopes to NE for the brow of a hill 400 ft. high along which the Limestones crop out⁴⁷ & where there are large caves which the Maoris use as burying places or wahi tapu. The Calc. clays & shales⁴⁸ are along the whole route judging from what is exposed in the cracks.

⁴⁵ Pliocene lava flow forms a flat-topped plateau.

⁴⁶ Whangarei Limestone east of Springs Flat.

⁴⁷ Raumanga area

⁴⁸ Allochthon melange[?].

Tuesday [Dec 5]

Start with Taylor at 8.30. pass over the top of Tikurangi [?] which is composed of the Hydraulic Limestone⁵² having a SW strike. The effect of the Lim. [?] in the soil on the hill is well shown by the fair quality of the grass & ----- variety of the shrubs. One part of the hill is thickly covd. with Cape Gooseberries which are now completely naturalized in the northern part of the colony. Pheasants & Turkeys are plentiful in the scrub on the hill.

On the south shoulder of the hill pass Frazer's farm on the edge of the Limestone. It lies high but is a beautiful situation. Looking to the south from this hill the country bears a strong ----- to some of the Oolitic & Cretaceous country in England with sharply marked "edges" indicating the out crop of hard strata. On descending from Tikurangi [?] the land becomes most wretched in its present state constantly of cold stiff clay⁵³ carrying only a scanty growth of Rushes & a few other plants that like wet ground. This is the characteristic gum land of the N from which nearly all the Kauri gum is obtained so that it must have at one time been covered with luxuriant Forrest growth. It must [?] be owing to frequent fires that it has assumed its present desolate appearance, but how the gum could escape destruction by the fires that destroyed all traces of the timber is rather difficult to account for.

The creeks which traverse this dry [?] country generally lead in coulées or steep sided ravines where they end abruptly. In one of them a landslip showed a section 40 ft. high displaying ----- the white stiff clay shales, like the Moeraki beds but no fossils.

Approaching Mangapai the road rises over Bryants' Hill which is the outcrop of beds of Argillaceous sandstone⁵⁴ that dip 25° NE. This sandstone contains concretionary masses of inferior [?] freestone [?] in one of which a quarry has been opened. The stone is only useful for local purposes, and is much inferior to that at Onemana Point which has further the advantage of being near deep water. The ridge of Bryant's Hill is continued to the SE to the Harbour & also rise to the NW as a low range of wooded hill bounding the North side of the valley. At this part of the Island the watershed between the E. & W. coasts is composed [?] of the Blue clay marls [?] that form two saddles behind Mangapai, elevated about 200 ft. above the sea, & within about a mile of the East Coast. The stream that flows to Kaipara Harbour on the Westward ----- has a long ----- course & is said to be navigable for canoes.

In the beds of the cr. the Blue Marls & Argillaceous Limestone is exposed below [?] O'Mara's House & on the opposite side of the ridge in the head of a gully running towards Manugapau⁵⁵ the blue clay shale crops out intruded with veins of Calc. spar which were mistaken for Quartz veins on account of its containing Pyrites.

The sandstone of Bryant's Hill⁵⁶ seems to overlies the Calcareous Marls as they all dip 20°NE but this is most probably due to a fault running SE by which the shales are thinned down on to the South of Mangapai the sandstone ---- appear forming a range of hills on which a party of emigrants were cutting a road.

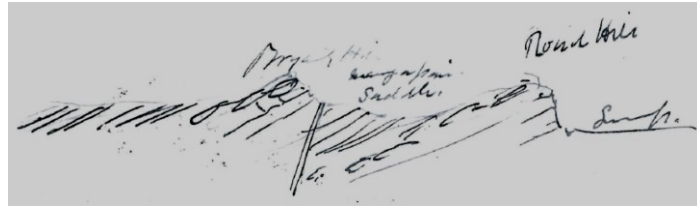
⁵² Mahurangi Limestone.

⁵³ Allochthon melange.

⁵⁴ Probably Punakitere Sandstone.

⁵⁵ Mangapa.

⁵⁶ Probably Punakitere Sandstone..



From Mangapai we travel ----- & ----- Bryant's hill following the poor green [?] land for 5 miles, the surface [?] having a further undulating form till we reach the edge of a patch of Bush Country that has Kauri in it. Here the form of the surface is ---- being cut up into sharp razor back ridges & ----- spurs separated by deep narrow ravines. It is very difficult to draw [?] the ----, but it appears to be an ---- yellow or white calcareous shale,⁵⁷ so much ---- that it breaks up into small angular fragments with the slightest touch. It is ---- only the shells on edge which are very easily worn into ridges 300 to 400 ft. high. Follow along the coast of one of those ridges till within 2 miles of Maungatāpere Hill where as the formation changes to the Dolerite lavas the shale [?] seeming to plunge under the volcanic rock. The razor back may in part belong to the Trachyte Tuff. Formation.

The dolerites from Maunu & Maungatāpere coalesce & envelope the West end [?] of both the Omara & Wha--- ranges. The Dolerites give rise to red soil, often quite deep ---- colour. It is exactly like the Dunedin dolerite & is interbedded with Tuffaceous clays & volc. mud.

In the afternoon ascend Maungatāpere Hill with Mr. Walter [?] & Mr. Sinclair [?] Mr. W. & Taylor we --- a survey line through the Bush. very steep the Hill is 600 ft. above the House i.e. 1400 ft. above the sea (not the same as Saddle Hill). No rock crops out but it is all of Dolerite, containing olivine. The top is a flat ridge bearing S & --- said to be a lake on the top but could not find it⁵⁸. Found a lot of old Kumera pits full of water. The Bush on the top of the hill is of large size. Rain all night.

Wed. 6th Decr.

Return to Whangarei with ---- & Taylor. 1 1/4 mile from Whangarei examine [?] Limestone rock⁵⁹ on S. side of the road. Subcrystalline [?], forming large ---- blocks outer surface grey [?], but internal to be [?] yellow. It forms distinct beds that dip 20° to NE. This same ---- rises [?] to the SE to the Otinoia [?] & from the range of hills previously described.

Coal mine again.

Section at the coal mine is

Green sandy clay a roof contains fossil shells (Turulitea, Ostrea ? &c.) (see list) & these partings [?] of coal showing the true contemporaneity of the beds.

Coal 4 ft.

Brown sandy -----

Firm clay 15 ft.

White Firestone 4 ft.

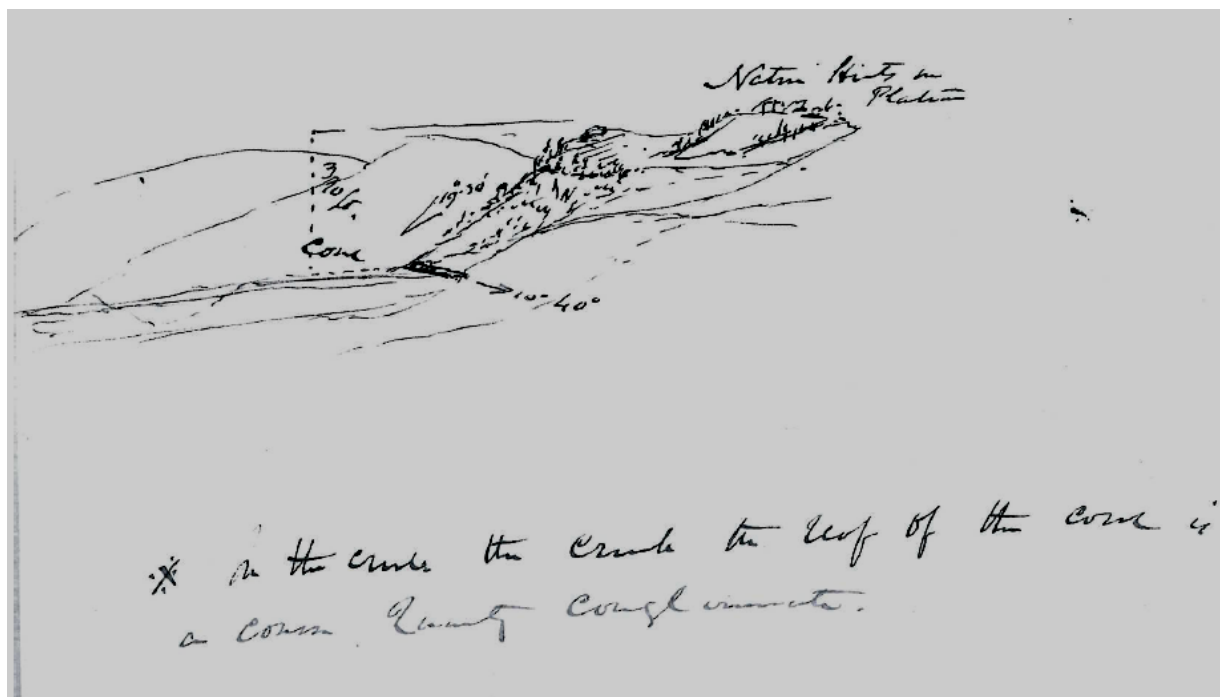
Firm clay no bottom yet.

⁵⁷ Whangai Formation.

⁵⁸ A small remnant crater with a swamp is present at the top of Maugatāpere.

⁵⁹ Whangarei Limestone east of Maunu plateau.

The coal evidently lies in a syncline, the axis of which is NW. The creek enters through shafts at the SE end of the trough.



Thursday 7th Decr.

From the coal mine follow round the edge of the Plateau to the N. & ascend in the bed of the next creek. Find nothing but arenaceous slates dip 45 W. NW. strike being on the whole NE. Follow along the Plateau which is Dolerite, pass any extensive [?] clearings now abandoned & having [?] beautiful spots for settlement. The land on the Plateau is very rich [?]. After crossing a creek & passing the main road to the B. of Is. by the Big swamp pass later a high Volc. Hill & a smaller hill that rises like a knob on a spur from the larger one (named Horopeka [?]).⁶⁰ Follow a fairly made road, constructed by the Maoris for bringing [?] in Kauri Gum. The surface ----- with Fern is strewn with ----- of Earthy Trachyte & in the bed of the stream that flows S. hard ledges of vitreous Dolerite. Black Hill ---- reported to be found there [?].

Turn [?] to the N. & pass --- ----- flat --- ---- into Dolerite ----- . Pass several farms & a good deal of fenced land & on reaching the bush at base of Black Hill, cross a ----- which seems to be quite ---- into ---- & ---- of ----- which they dry out & were from the road. The Iron Ore which exists here in considerable quantity may some day be worked to advantage owing to the proximity [?] of the coal mine & the abundance of Limestone in the ---land.

[No entries in journal after 7 December]

⁶⁰ Possibly Hurupaki volcano or perhaps Hikurangi.

Part 2: Letters from the Field Party to the Colonial Museum

F1. Hector to Mantell, 25-11-1865

ATL MS-Papers-0083-298

Auckland
25 Nov 1865

Dear Matara,

Arrived here yesterday & leave this Evening for Wangarei – thence on foot to Bay of Island, Monganui, & North Cape, perhaps.

Whitaker⁶¹ is very attentive & does everything I can wish for, to aid me. There is to be no difficulty about funds & he is to write to Stafford about the adjustment of the expense between the Province & the Gen. Govt. I send a small parcel of specimens by the *Phoebe* as per list enclosed. Nos 1-2 & 3 will be passed on to Skey for Analysis. His Rept. to be forwarded to me.

I spent last evening with Gillies. P----- seem very high here. All seem quite sure of getting separation & that it is the right thing.

I have seen lots of the Members & they were asking for you. Gillies & Whitaker have been planning a scheme of Financial Separation of the Islands which if only proposed as a temporary measure will take. But the Separation sought by the Otago men is not the kind of thing that the mass here expects to get. What they want will never be listened to for a moment, it is. Their share of debt (for N.I.) 1/3 rd. Abolition of all other Prov: Govt. in N.I. but Auckland.

Municipalities for Wellington, Whanganui, Taranaki, Hawkes Bay &c. &c. All Waste Lands of N.I. to be handed over to the Govt. at Auckland.

Isn't it a neat scheme? & they think they'll get it!! Fancy the Southern Members that would not stand the Stamp tax, undertaking 2/3rds of the debt & giving up all claim on the lands about which all the fighting has taken place.

Ever Yours
James Hector.

⁶¹ Superintendent of Auckland Province.

F2. Hector to Mantell, 7-12-1865

ATL MS-Papers-0083-298

Geological Survey of New Zealand

Whangarei

7th Decr. 1865

My dear Mantell,

By the steamer which leaves to day for Auckland I send two cases to be forwarded to the Museum, which must be opened at once on their arrival as that marked No. 1 contains live plants & No. 2 dried plants along with some specimens of the Whangarei Coal. I am not sending the Mineral specimens further than Auckland at present as I may require them there before I return.

I have seen a good deal of this district now during the last 12 days, only four of which have been wet. I had a whale boat & Maori crew for several days examining the harbour & the rest of the time have been riding & tramping about the hills. It is a most beautiful piece of country in every respect and geologically as interesting as any place I have seen in N.Z. It is a very difficult country to make out though & would take a long time to work up properly. There are L. Palaeozoic slates in ridges, the troughs are partly filled with Secondary Strata comprising Coal Measures, Green sands, hard sandstone & grit & thick beds of subcrystalline Limestone. So far as I can yet make out this formation corresponds to that at Pakawau. There comes an extensive series of Tertiaries, without fossils like those about Auckland & lastly the great areas are smothered by sheets of Trachyte.

The Coal is of very good quality. I enclose two samples which I have carefully selected for you to put in Skey's hands for Analysis & I would like to get the results forward to me as soon as possible. The seam is only 4ft. 2 in. thick & dips under a table Land 600 ft above the sea level, the outcrop being at 400 ft. It is right at the base of the series & within a few feet of the surface of the Slates.

Since I arrived I have had swarms of people running in with Iron pyrites from the Aphanite slates & in chert nodules that traverse them, under the idea that it was gold. They are quite mad here about mineral discoveries of all sorts. Men have been out prospecting in all directions for gold, but the only real specimens that were found were got from under a bed! where they had been placed by their owner who brought them from California.

I have only time to write a few lines to Auckland before the mail closes. I did not get in till late last evening from a four days trip & being so much in the field I cant do much writing or I would send you a fuller account of my doings. I am going down to the Heads again today & on Monday I start overland for the Bay of Islands. I shall be boating there for some time & will then go on to Monganui & the North Cape if possible. The country is far more worth trouble & examination than I expected.

I shall write again from the Bay & not in such a hurry as I am at present. Buchanan has got lots of plants but I dont think many novelties. I enclose a note which he has given me concerning the plants sent. Donald had better change the dried plants at once as they may heat.

Ever Yours Sincerely
James Hector.

F3. Buchanan to Gore, 21-12-1865

Te Papa MU000147/001/0531

Russell, 21 Decr. 1865

Dear Gore,

I fortunately have an hour in the Doctor's absence to scrape you a few lines, we have arrived at this place in the Bay of Islands after some rough travelling from Whangarei with horses, after remaining at the latter place about a fortnight the Doctor bought three screws or strictly speaking, two, as he has engaged a young Gent who speaks Maori⁶² and he bought his own we travelled by way of Hikuranga⁶³, then struck for the East Coast at Whananaka⁶⁴ passed along the Coast to the North end of Whangaruru⁶⁵ Bay over the vilest track that even horses were taken in sweltering hot weather every drop of water taken out of your body by day and the blood at night by mosquitoes, with the exception of a good climate there is nothing else to tempt settlement in this part of the North Island, from Whangarei to the Bay which we reached by the Waikari River stopping there two nights we passed on to Kawa-Kawa River, camping on the classical ground of the first War and I must say the army had a heavy job, they took nine months to cut a road to reach Heki's Pah on Wangapekapeka⁶⁶. The Doctor has remained on Kawa-Kawa examining the Coal Field and myself and companion have gone on with the horses to Pahia, and put them in Bishop Williams' paddock thence we have come across in the ferry three miles to the chief town Russel, where I have been sketching the Bay from the Flagstaff. the old Flagstaff is still to be seen half burned and the ends of the Block house are still seen, you are aware it was on this spot the first war began, as the Maories came up the hills on one side the soldiers bolted down the other. I picked up a fork with the handle burned off no doubt belonging to a British beef eater. This once busy place is now a miserable hamlet. What lies in the womb of next week I cannot tell you the Doctor will be down on Saturday and then we shall see.

I dont think I shall find much new, every place from Auckland North is the same in plants. I hope the live plants sent will grow I will collect more at the Bay.

I was very sorry to hear Mr. Mantell was badly and glad to hear you are making such progress in the museum. I think it is very judicious in opening it to the public I dont see the use of museums else.

I hope Rayer is still in a job I wish he was with us, the Doctor originally intended to have had Maories, but they have such a bad character up here I dont regret he has got a White man as interpreter. I dont like the Maories myself and would give them a wide berth at all times if I had my way, but sometimes we camp in a Kaianga, and my opinion of their progress is very low. I dont see what difference there could have been 50 years ago except they have blankets instead of their own flax dresses. I cannot see what the missionaries have done except teaching a few of them to read Maori and write it their old superstitions are as strong as ever, we got into a scrape about same tabooed ground at Whananaka in consequence of Dr. Hector going on it to camp there was a saving however in the long run as none of them could take a bit of tobacco from any of us as we were all tabooed for the time regarding food.

⁶² Henry Mair

⁶³ Hikurangi

⁶⁴ Whananaki

⁶⁵ Whangaruru

⁶⁶ Probably Ruapekapeka

I can nothing inform you as to our future movements, but I believe we go to the North Cape next week.

About the screw I am satisfied with the way you have done and wish you to let it remain as it is. I have an account at the Bank of New Zealand however, but that does not matter.

It does not seem to me as if we would be back for a long time as the Doctor talks about visiting Taranaki on the Road back. Wishing You good health without the exercise of leading a £5 screw over Maori tracks and swamps

I Remain Yours Sincerely
John Buchanan.

F4. Hector to Mantell, 23-12-1865
ATL MS-Papers-0083-298

Korirarika
23 Dec 1865

My dear Matara,

I am much concerned about that numbness of your arm. Its the horrid paint. You must get Gore to bring down all the work to your house & only shew up at the Museum with a pipe in your mouth. I used to feel just the same kind of thing & believe it should be considered a new variety of disease & called Kerosene Painters Colic. Without joking I used to feel the same thing in my left arm. I distinctly remember mentioning the thing to Pillans & I fancy to yourself & to Gore. Anuerism!!? “no fear cockey”.

As I expected you are going boss at the Museum far better than I could do. *Vide* your notes of 24th & 29th ult. which I have just recd. Don't let any thought of my criticism cramp your efforts towards illustrative arrangement. I never felt strong in that branch & as I always had a chronic funk of your criticism its absurd in you to regard mine. Fire away & I will feel thankful to you for ever if you can knock the Mus: into shape before I return. The N.Z. Soc. revival is good, though I fear it will require the same exercise of Hau-hau-ism to get up a revival in scientifics as in Maoris or Methodists. The requisite elements are facts & folks to understand them. Now seriously I dont believe you have yet enough of either in N.Z. Nevertheless try.

I am glad you have got the Geol: Map under way at last. Of course it will be all wrong for this end of the Islands – but that is quite fair. I believe we will find the Upper Secondary Coal Formations to extend from the Kaipara to Mongonui. Most complicated affair to work out as they occur as detached basins – cut off at the surface sometimes by the outcrop of Palaeozoic strata & sometimes by the overlap of Tertiaries. By Fossils I have proved the Whangarei Hikurangi & Kawa-kawa Coal seams to be the same. This is Satisfactory to me, though not to the folks of the different districts who are jealous of each other as Tom Cats on a roof ridge. I send you some enclosures for Gore & Skey. I have just arrived & write in a hurry to catch a schooner that is going out. I have been in the bush for a fortnight now & will

be here a few days & will write again. Then to Monganui & N. Cape & Southwards by Hokianga. Do keep out of the paint like a good soul.

Ever Your Sincere Friend
James Hector

To Matara.

F5. Hector to Gore, 23-10-1865
Te Papa MU000147/001/0037

Bay of Islands
23. Decr. 1865

Dear Gore

Many thanks for your two notes of 24 & 29 Dec. which have reached me here. Along with all the enclosures I am sorry to find no English letters among them but perhaps they had not reached Wellington by the latter date. As I shall be in Auckland on my return for more than the period between two mails you may continue to forward my letters until I give contrary notice.

Buchanan is well but has not found many new plants to keep up his spirit. He has collected lots of specimens - & live plants. Several boxes will be forwarded from this. I hope the first set have arrived safely by this time.

We have had a very rough journey up the East Coast, hauling the horses over all sorts of impassable places. Though the country is interesting - variety in the way of mineral specimens, is not large so that the additions to the Museum will not make much show.

We got on very well with the Maoris – only one night I encamped by mistake on Tapu ground so that none of the natives would have any dealings with us or touch our things. You may with reason fancy that the disadvantage was rather theirs than ours. Thus our visit to the village did not diminish our stock of tobacco or sugar. At other places it was very different – Kapai the Tapu – say I.

I am glad you enjoyed the concert. That reminds me that I must wish you & Mrs Gore a Merry Xmas. As I don't know folks here I shall have mine all to myself.

I am glad to get such good accounts of the museum etc from Mr Mantell. I enclose a few papers to him for you to file. I got the *Witness*. Send me any papers that can be spared, but don't omit those to my home folks

Ever Yrs sincerely
James Hector.

F6. Hector to Mantell, 28-12-1865

ATL MS-Papers-0083-298

Korirarika
28th Decr. 1865

My dear Matara,

A schooner named after your dear friend Gen: Cameron has just come in & leaves again at once. She brought some papers that had been sent by Gore which I reenclose as I have no use for them here & they may get lost. Please ask him to file them in their proper place.

He can embody the Meteorology with the rest that he has prepared. It is very interesting.

I am glad to hear from him that the Museum has been opened & gives satisfaction. All that I have got yet will not form a brilliant addition to it, but I have been too much on the move, & will have to settle down & collect somewhere here in the N. for a week or two before I return.

I was off to Whangae to hunt for an out crop of the Coal which I think should be there but it is blowing great guns & I had to put back. Cold wind from SW. which is a great change after the sweltering weather I had at Kawakawa. I have got soaked nearly every day lately – but only by heavy shower, the most of the day being fine.

Please tell Gore I dearly need the Analysis sent by Skey. I am very much disappointed that there are no England letters. No English news but the rumour of Palmerstons death has reached this no one knows how. I am just off to try it again as there is a lull.

Ever Yours
James Hector.

I hope your arm is all right again. Gore does not mention it.

Please tell Gore I had no time to write to him.

F7. Hector to Mantell, 1-1-1866

ATL MS-Papers-0083-298

Janry 1st 1866

My dear Matara,

By the *Sea Breeze* I have recd. the various Analyses of the Wangarei specimens – also your letter of 27 Decr. I fear that I cannot have sent a fair sample of Walton's Coal as it cannot differ so much from the Bay of Islands Coal.

The loose blocks of Coal in the box were all from Walton's Seam. I shall write to Skey about it as he has omitted the Sp. Gr. of the coal & some other points. I am very sorry that the Museum duty ties you up. I never intended that it should do that. Cant Gore manage now that the place is in working order.

I cant get back for some time yet as it would just be throwing away the results of the trip if I did not see the country to N & W. But I shall be quite vexed if my being away interferes with your arrangements.

This is a holiday & there are no d--- of races[?] &c.

About 300 Maoris are here. Most of them drunk as lords. I have never seen so many before. Webster of Hokianga has just come to plan with me about my trip so I must close. I am off for N. Cape tomorrow & must leave all letters unanswered in the meantime.

Yours Ever
James Hector.

F8. Hector to Gore, 14-1-[18]66

Te Papa MU000147/001/0100

14.1.66
Dr Hector

My dear Gore

Only a few words to say that I have heard of some letters being at the Bay of Islands for me & that I shall not get them till I return there in a few weeks, so that you will understand why I do not answer them if there is anything requiring attention.

I told Buchanan when he wrote to you to tell you all about the boxes that have been sent and are to be sent.

Take care of the live plants – some of them are very interesting and valuable.

It is slow work getting through the country – as there is much to see & the folk will only grumble if I miss any of their wonders.

I start today for the north. I have been six days in this district when I only meant to be 2.

Forward all letters to Auckland till you hear to the contrary.
Yrs sincerely
James Hector

O-----
Mangonui
14/1/66

F9. Hector to Mantell, 14-1-1866

ATL MS-Papers-0083-298

O---- Mongonui[?]
14th Janry 1865⁶⁷

My dear Mantell,

I am writing from your friend White's House where I have been staying for the last few nights. He is a most kind & jolly fellow & was very glad to hear of you. He has made a very pretty place here & is surrounded by a whole tribe of youngsters.

I have now seen the whole of the Whangaroa & Mongonui districts & today I start for Kaitaia & the West Coast. From Whangaroa I sent two boxes. One with dried Plants & Fossils, the other with live Plants. In a tin Box in one of these cases, you will find beside a Kiwis Egg, some live specimens of H---- ----- . They may perhaps continue alive till they get to Wellington. The Ferns &c. sent as roots should be all put under glass. An old Cucumber frame will do.

From Mongonui there are also two boxes sent. One of them being nearly filled with roots of ----- . The specimen in these boxes are only ----- & I have no time to make out a list for you this time.

White sends his regards & says he wishes the w-- his wife[?] to take him South so that he might see you again.

Ever Yours Sincerely
James Hector.

F10. Buchanan to Gore, 14-1-1866

Te Papa MU000147/001/0526

Mangonui, 14th Janry. 1866

Dear Gore,

A vessel being about to sail for Auckland from this outlandish place, and having an hour to spare I pass the time in reporting progress of our journey and first we have had since leaving the Bay of Islands all that could be desired in good weather previous to leaving Russel we helped at the delivery of a New Year at least my assistance was more of the nature of an audience than a performer although the Doctor & his interpreter took a very active part as performers at Balls & otherwise, of the latter Gent⁶⁸. He is a youth of 28 native born a swell rather fast if circumstances would permit, and whose whole conversation if he could meet people of his own tastes is to talk cricket, if I were to judge from the common subject

⁶⁷ Actually 1866.

⁶⁸ Henry Mair

talked in every place we pass through it would be that the male population did nothing else than play cricket the half of their days and talk about it the other half. My Friend Mair who is a very good soul otherwise has an idea that the destined purpose of man on this earth is to talk cricket and sometimes play it.

I attended the Races at Russel when all the beauty and fashion of both Races with the crossings were present, there would be 200 Maories in town from the surrounding country every thing went off orderly the Maories of course got drunk at night and were a little noisy singing their peculiar songs which by the bye appeared to me as very hard work beating their breasts and quivering their arms, all snorting at once like a row of locomotives and perspiring like hot Kumeras, I dont believe the Maori is a step in advance of what he was in Capt. Cook's day he is worse perhaps in some points.

On leaving the Bay we went by Paihia Waitangi Falls Keri-Keri Falls and Waimate a very fine settlement, being a mission place I suppose is the reason there is no accommodation house or any liquors sold from this place we went to Whangaroa Bay a very fine Harbour but little available land, it is a place of no importance the Maories have always been troublesome here, and 50 years ago murdered some 80 people in a vessel called the *Boyd* whose hull can still be seen at low water. I went with the Doctor at this place to an Island 3 miles from the Coast. I expected to have made a haul but got nothing all the vegetation is the same as the main land. From Whangaroa we came to this place. Mangonui. I cannot see how this place should be so far ahead of the last as it is not such a good harbour it has a Jail, a Church and Custom House Post Office & Court House perhaps it is the outlet of more important places inland.

On the whole this is a miserable barren country very little of it being fit for settlement and the most of that little being reserved by the Maories who if they again become troublesome should be allowed to take it but this is not likely ever to take place as they are too few. I have begun to form an opinion that this interesting savage is a myth, that is to say in numbers more than 12 or 20, unless you beat up a whole District when you may get 200. We have found since leaving Whangarei a strange belief to exist that the Maories are very numerous some place further North but he seems to disappear as we advance North. I have still a hope and a strange [?] since the Doctor has bought me a new Horse here (the old £5 mare having got too weak to carry her bones, by the bye I wish he would buy me a new saddle as the one I have which cost £1 hurts me most infernally about the lower region). I say I have a hope that if we advance rapidly on the North Cape we may see the last mob tumbling into the sea.

As they have disappeared before Dr. Hector as chaff before the wind in the North, the Government ought to send him to the East Coast and save the country the expense of a protracted war with a savage myth.

I dont believe there are 10,000 Maoris North of Auckland, the whole affair is an organised swindle to keep up a lot of useless offices and I have no doubt the Commissioners, Teachers, Interpreters or by whatever name they are payed in the Native Department, either willfully or neglectfully make false returns of their numbers, for if there were no Maories there would be no Offices, a very envious feature in the Maori swindle is the immense number of Native assessors, if there are a few miserable wharries with a population of 4 or 5 males one of them is an assessor you will find three assessors at Whanganui in a kainga with a population of about 30.

We move from here on Tuesday I write this on Sunday.

I hope you have received the boxes in good condition. A Box was sent from the Bay of Islands with live Plants on Janry. 2nd.

3 Boxes lie there till we come back again
2 Boxes sent from Whangaroa on 8th Janry.
2 Boxes will be sent from here Manganui about the 14th.
Also 2 Boxes were sent from Whangarei and their receipts acknowledged.

Up to this time my mission has been a failure, the ground we have gone over has been too well searched previously, whether any thing new will be found as we reach the extreme North will be seen. I hope you take the live plants and place the balls immediately into damp earth if possible under glass, the dried plants I hope Donald places in dry paper without delay as they will want it very much. I am glad to hear you are so far advanced with the museum and that Mr. Mantell is making practical use of it by admitting the public.

Give my regards to Rayer. I still regret his not being here if he was, I would cut the Doctor and his swell interpreter wholly and take to the Tent. I find myself often in the way when not wanted and could be more independent in a Tent. I dont see how we can be back for a month yet from this date if not more. We are likely to be in Russel in three weeks, so you may write there.

Yours Truly,
John Buchanan.

I forgot I am out of money would you be kind enough to send me some on order on the Bank of New Zealand Russel, for £10 (Ten Pounds) will do. I have had a good deal of my total expenses to pay and before I get back from the North Cape I will be much in need of clothing in the meantime I must borrow from the Doctor. I took £15 with me but I have been mistaken in what was needed.

Yours Truly J.B.

F11. Hector to Mantell, 5-2-1866

ATL MS-Papers-0083-298

Hokianga
5 Feb. 1866

My dear Mantell,

You begin a note dated 28 Dec. which I have just received by saying you expected me to return next day. As I have reason to know that I did not, I trust you bore your disappointment with fortitude. I dont want to trouble this district again for a long while, so that I must take sufficient time to see it now, & it is not easy to move about rapidly in. However I have now done all the East Coast, & North Cape & when I have seen this river I must again spend a few days at Kawa Kawa & will then make tracks for Auckland by way of Kaipara & soon after you may expect me to turn up to relieve you in Wellington.

Gore sends me a most satisfactory acct. of what you have done for the Museum. Between ourselves I believe the Museum is a great gainer by my being so long out of the way.

I have already lost 3 days here from bad weather, but there is some signs of the storm ceasing now & I hope I shall get up the river tomorrow. I wrote you a few lines from Whites at Mongonui. I have since heard from him. I liked him very much.

I write this from John -----'s House, but I have not seen him yet as he is up the run at the Mills & all communication is stopped at present. I was nearly driven out of the river & swamped yesterday in a boat but pulled up on the last point of rocks, where by the way I found the *Veronica speciosa* growing. Only time we have got it as yet.

Dont fret like a good soul at my not returning so soon as I said. I wont say when you are to expect me either so that you wont be disappointed again.

Ever Yrs
James Hector.

F12. Hector to Gore, 5-2-1866
Te Papa MU000147/001/0108

Hokianga 5 Feb.1866

My dear Gore

Whale boat just come down from the Interior brings some letters forwarded from the Bay of Islands & as she is to return at once I send a few enclosures that must be attended to without delay.

1. B. of L. of cases containing books for & by Stanford p.s "Epsom" also Stanfords a/c of charges which can lie till I return.
2. A/c for the Indian cases which I have enclosed. It should be sent in & the money made payable in Dunedin.

I got here from the N. Cape two days ago & have been prevented getting the horses over (a swim of a mile) by a terrible storm which still rages. Yesterday in trying to cross I was nearly carried out to sea over the bar and only escaped by a fluke. It is so difficult to get about in this country & there is so much to see that I can't say when I will get back. Its no use fretting. I am glad to hear the Museum is getting on. I have advised from time to time of cases sent. There will probably be a good lot of things from this. Buchanan is quite well but as he is getting fine new plants now I shall send him on to Wellington by the 1st chance as he can have time to get a look at the Kaikoras before the season is past.

We have been a great deal among the Natives of late & have got on very well.

Let me congratulate you on the addition to your family & remember me kindly to Mrs Gore. Hoping to be with you soon.

Ever Yours Sincerely
James Hector

F13. Hector to Mantell, 12-3-1866
ATL MS-Papers-0083-298

[12 Mar 1866
Whangarei]

Dear Mantell,

I got all your last budget of letters after some delay & could not answer them, & as I am only here on my way South (I start in a few minutes overland to Auckland) I will not answer them now but trust to do so in person soon.

From this I send a large box of Plants which Buchanan must be careful in unpacking as the roots are in two layers & in order to steady the plants the box is nearly filled up with Moss. The Moss must be very carefully picked out in small pieces. The box contains Pava[?] roots, Kauris Trees, Ferns 5 species M---- &c. &c.

Also I send another box with some dried plants & a few odd specimens.
I will not be long after this.
In haste
Ever Yrs
James Hector

12 Mar 1866
Whangarei.

F14. Hector to Mantell, 18-3-1866
ATL MS-Papers-0083-298

Geological Survey of New Zealand
Auckland
18th March 1866

My dear Mantell,

I have just arrived here & tomorrow start for Coromandel to have a look at what they are about there. Next as I have traced a most remarkable apparent (mind I dont as yet say real) passage from Hochstetters Upp: Oolitic Strata to his lower Pliocene!! I am anxious to visit his locality at Aotea where he got his Oolite Fossils before I open my mouth on the subject, as we may be talking about different things. Next as I have not seen the Kaipara & it is the only district North of this not examined & as it can be easily reached from Auckland &

I have reason to believe is so simple that its examination will be a mere matter of form – I propose to take a run up there before I return. The above were my plans till a few minutes ago when I met Col: Haultain who tells me that the Govnr. is going to make a tour through the interior by Taupo & Rotorua & that perhaps he might like me to accompany him. This may cause an alteration in my plans. But in any case I cannot say to a day when I shall see your dear old phiz.

I was glad to hear (by Report) since I arrived here that our[?] stolen property had been all recovd. I am sincerely glad for your sake. Indeed I actually funk'd facing you. I have quite made up my mind to return every article of value that has been lent to the Museum when I resume the reins unless I can be fully assured of their safety.

What is all this about Donald. He must not go. He was breaking in to the work so surely. I hope his leaving was only a false alarm. I hope Buchanan got back safely, he will have lots of work overhauling his plants & notes for some time. He got fairly wearied with the trip & I fear began to despond & feel fretful. In some respects the trip was rather wearysome as the country is all very much alike botanically.

Tell Gore that the letters by the three last mails from the south have all missed me in the north, so that if there was anything requiring attention he will understand the reason.

In haste
Ever Yours
James Hector.

F15. Hector to Mantell, 22-3-1866

ATL MS-Papers-0083-298

Auckland
22nd March 1866

My dear Mantell,

I have just recd. three notes from you (on my return from Coromandel) of dates 9th 10th & 15th inst. I have just seen the Govnr. who is on the point of starting for Taupo or at least Rotorua Lake & he is very desirous that I should accompany him, so that you had not expect me for some time yet. I wonder when I will get back. He seems to think I could go down overland but others say not, so that I shall most likely leave to return here again, besides I must really see Kawhia before I can make up my mind as to the age of the Coal formations in the North as it was there that Hochstetter got fossils & fixed the age of the series of rocks beyond doubt.

As soon as Buchanan is recovered I think you might send him to Whanganui to make a large collection of Tertiary Fossils, let him take plenty of time & get good specimens & lots of them. The Grey beds can wait till I can go down myself as I wish to see all the Coal Fields before winter.

I shall try & find out the good Samaritan[?] Crawford, but I have hardly a minute to spare. I hope the boxes will turn up all right. I reenclose his note.

The plan of the Museum looks well. I see you have one of the Pyramid Cases back in the old corner again. Certainly it would be better to have the stove in the drawing room. It would warm the Museum equally well & be a comfort to those at work.

I wish I were down at the old place again I assure you. I am getting tired. However the temptation of the trip to the Lakes is too great for me.

In haste
Ever Yours
James Hector

Govr. sends his regards & is very sorry that the hair is lost out of the Napoleon Ring.

F16. Hector to Mantell, 11-4-1866

ATL MS-Papers-0083-298

Kawau
Sat 11th April

My dear Mantell,

We had a jolly trip up to the Lakes & I saw a great deal that I did not know before, so the trip paid. I have been here for two or three days & this afternoon we start for Kawhia on the West Coast, where S. G.G. will be staying long enough for me to get a set of the Jurassic fossils for the Museum.

Perhaps the *Eclipse* will go right on to Wellington, if not I will try & get down overland, if peace is made with Rewi – if not I suppose I shall have to return to Auckland. I dont like to throw away any chance of seeing country & doing work without charge to the Geol: Estimates. Besides I get man & boat &c. from the Govr. whenever I wish.

I send two boxes of specimens from here to Wellington. They contain.
Specimens - Rotorua &c.
Mayor Island
Kawau

They are not well labeled so if you have them unpacked please keep them separate. Kawau is a splendid place & the Govr. is doing the improvements very judiciously. I have been over every bit of it now & made a Geol: map of it for H.E. He is building a fair house, plain but substantial. All the scandal we have heard is most unmitigated rot & lies.

Dont be crusty at my staying so long away like a good chap.

The *Sturt* has just come in & is off at once. I have just come in from the Copper Mine in time to write these few lines.

Ever Yours
James Hector.

Part 3: Letters from the Colonial Museum to the Field Party

Memos about the running of the Museum

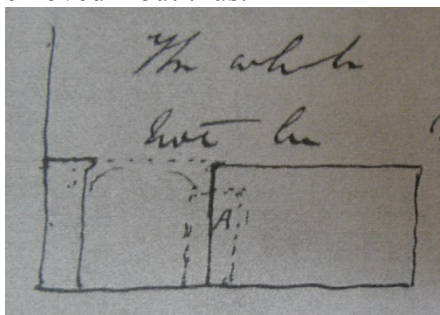
M1a. Hector to Mantell, 1865

Te Papa MU000147/001/0089

[Undated c. 1865]

Memo Instructions respecting the Museum

- I Application to be made for additional show cases.
1. 4 similar to those last made (floor cases)
 2. Sufficient wall cases to fill up the whole side of the wall after the partition is removed.
- II As soon as the Laboratory is finished the present Lab. Building will be used as a draughting room and part of the new Lab. as offices so that the whole space except Dr H's room & Mr Gore's can be cleared out & added to the Museum. The whole partition must not be removed – but thus.



A. being the present door[?] which should be removed leaving a space between the wall cases & the partition of 6ft.

In the small space thus marked off all the Nat. Hist. & Ethnological collections should be arranged & the rest of the Museum devoted to Geology. All the specimens should be spread out in trays if necessary & labeled leaving blanks when the information cannot be obtained.

- III Proceed with Catalogues entering everything as fully as possible & leaving blanks to fill up further information.

J. Hector.

M1b. Stafford to Mantell, 18-11-1865

Te Papa MU000147/001/0076

Colonial Secretary's Office
Wellington, 18th Novr. 1865

Sir,

Dr Hector, having informed me that you have kindly offered to superintend the Museum, during his temporary absence at Auckland, I have to state that I am much obliged for your offer, and will gladly avail myself of it.

I have the honor to be,
Sir,
Your most obedt. servt.
E.W. Stafford

Mr Mantell Esq.

Wellington.

M2. Mantell to Hector, 24-11-1865

Te Papa MU000147/001/0079

Geological Survey
24 Novr. 1865

My dear Hector,

I was off work yesterday but try my hand at it again today. A sort of numbness & permanent pins & needles in the right arm caused by pressure on the nerve from aneurism of the Clavian artery (That's my theory, Boor says bosh & as such I regard that opinion.

Stafford has minuted the map papers in the negative, but I wont accept that or communicate it to Ward & Reeves until I have seen him when I think I can shew grounds for his changing his decision. By reviving the N.Z. Society with the objects of meetings & readings & printings of papers I think your publication funds may be much relieved. I have begun to sound folks & fancy some 50 or so at £2.2 per annum can be raised. Sir G. promises his aid and will give it.

Cases not on legs yet but growing thitherward. I have been obliged to rearrange to some extent so as to increase accommodation & intelligibility. I enjoy by anticipation the groan of disgust wh. the change will wring from you.

No news save that. It is blowing three Nor-westers at once which is rather strong.

Yours
Matara

P.S. I'm going into the Type minerals now.

M3. Mantell to Hector 29-11-1865

Te Papa MU000147/001/0538

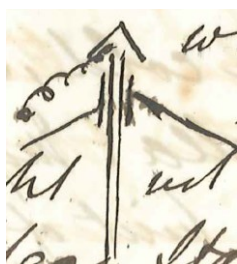
Col Mus.
Wed 29 Nov [1865?]

Dear Hector

I received your chit from Nelson yesterday. Vogel was here soon after extremely anxious to learn whether he had a chance of seeing you in Auckland whither he is bound on some devils errand or an another. He brought a good foot square specimen of stalagmite from the floor of the Lyttelton Hill cavern: apparently chips of rock thinly encrusted with xtallized Carblime.

Sir George was here again yestermorn. He proposes to assemble the survivors of the old NZ Society at Govt. House in conversazione to discuss the revival thereof. You ought to be there, but it will be a relief to your mind and body if on your return you find the thing re created for your recreation & adjuration.

200 copies of map ordered by today's male[sic].



I have found a capital stove for the museum but not the means to get it. It is about 6 feet high, cylindrical – fed once a day for 6 or 12 hours as required – stove with 16 feet piping £7 – additional piping say 24ft at 2d. [=] 4/- taking through roof thus wd ventilate sweetly. The whole ought not to exceed £12. I fear Stafford would prove tender & our fund is low decidedly low.

That Indian collection is wonderfully extensive but Mr. Gore has done wonders in combining condensation with display – he now begins to fear empty cases. I laugh him to his nose.

A pouring southeaster & I have to go all the way to the head of the Bay with a cold, cough & umbrella. My aneurism was a hint of sunstroke which I hope to get over soon but my little fingers still tough.

Wishing you the rasa[?] stones that Adam b-----

Matara

M4. Mantell to Hector [23 Dec. 1865]

Te Papa MU000147/001/0086

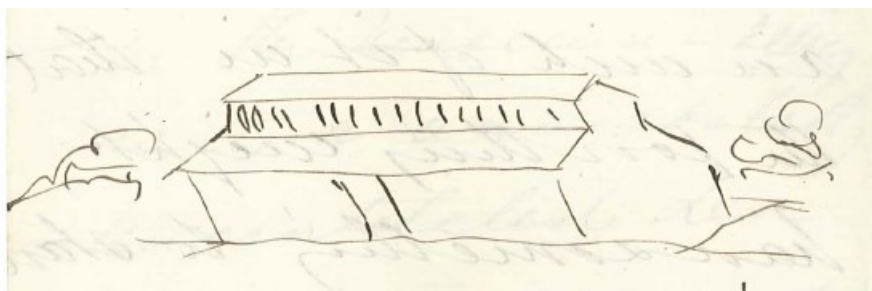
Col. Mus.
23 Dec. 1865

My dear Hector

I have not been near this museum for two days, having been occupied in watching the operations & collisions & collusions (which last are expensive) of two intrusive receptor dykes in my house of Carpenterite & Painterite with traces of pyrphoritic plumberite. A hell of a row & a devil of stink with a deuced longbill. *Voila tout.*

The New Zealand Society has been almost throttled in its birth by Sir George's too great urgency about his conversazione in the first instance, and utter forgetfulness of it in the second – more than 50 members give their adhesion but have not yet been assembled or organized & not one of the 50 seems to care about it. Of a truth this hundred guineas a year for publication will be hardly earned, even if I do muster sp--- again & get it. Your most scientific tenant won't say one word to cheer or discheer the effort and Stock, on whom I had much relied says he cannot afford to join.

It is blowing diabolically from the norwest – one of the beastliest, gustiest flatulentest days we have had. The Museum is or seems to the minds eye to be assuming this shape



gradually changing indeed from timber to Pisa. Gore maintains its perpendicularity & his own – but I won't be satisfied till I've tested it with the goneyometer.

3 ½ inches of rain last month. I left an inch of it in that the poor thing might have something to start with.

I fancy Sir George is about to drift your way though or because he says nothing of it. I must remind you that your six weeks is nearly up. Your leave expires with the year. Though God knows I do little in the museum – seeing as it's a unin[h]abitably unventilated den. I have refused to accompany Moore to the station lest I should so desert your ----- . By next mail I will send you a report of the present arrangements, to save you from experiencing too great a shock on arrival.

The tickets are large as you will see for some specimens: but splendid for the major ones. I don't like the type of the heading so well as that of your Otago ones but the Govt Printing Office has no great variety. I have ordered some smaller y----. The trays have not arrived.

Stafford asked me task up the East Coast, but one which I think wd be more properly & satisfactorily done by an existing department. I told him so & sent him away to reflect.

When are you coming back? I am glad you find my belief true that Heaphy Hochstetter & Taylor had not only not exhausted the geology of the north but probably left much of interest unnoticed. But I am writing you a long letter & you don't deserve it. Remember me kindly to Judge White of Mangonui.

Merry Xmas & Happy New Year to you – I'll drink your health with your own wine whereof. I have saved a bottle ap---ppus. Excuse the writing but my hands are stiff with thorns cuts & scratches. I wish you also a safe return from that community of knaves.

Yours truly
Matara

M5. Mantell to Hector, 28-12-1865
Te Papa MU000147/001/0088

Dec. 28. 1865.

My dear Hector

Although you will according to promise be here on Monday first your letter will leave for Auckland tomorrow.

I rejoice to inform you that I have now re-entered the Museum after an absence of four days and to mark the event have discarded three fourths of Crawford's Picton paving stones. These will be put tenderly in a box till wanted (as ballast).

C. now presides in the R M Court⁶⁹ Laudatur ab Independent Culpatur ab Avertiser. Evening Post ---- sibilat ab sibi plaudat.⁷⁰

I met ---adance C a few days since, the first time for months.

I have almost come to the conclusion that I at least had better leave the NZ Society alone. The Supert. will make a dead set against it if I have to do with it & I want quiet.

Fenton says you are discovering gold & precious stones in the North. From you we do not hear by this male[sic].

Weather improving - a fresh fine S.E. now. Thy servant is very weary & would like to go to sleep for six months.

Yours
Matara

⁶⁹ Resident Magistrate's Court.

⁷⁰ An approximate translation: "Praised by the Independent, blamed by the Avertiser, ---- by the Evening Post."

M6: Gore to Hector, 9-1-1866

Te Papa MU000147/001/0096

Wellington N.Z.
9th January 66

My dear Doctor,

We received your letters yesterday dated Bay of Isld. 23 Ultō: - I was glad to hear that you were all safe & getting on well.

We were getting anxious at not having heard from you for the last mail or two.

Mr Mantell is writing & will give you a full description of the Museum &c. I am sure.

I am working now principally at labeling. All the Otago Rock specimens are labeled also the Nelson, Marlborough, Coromandel, Auckland & Victoria & look very well, in fact I am going to label everything I can before you come back. The Native implements are all in one case & fully labeled & look really well & are far more interesting than before. Of course you know we are open to the public & have a peeler⁷¹ in attendance. On Friday last we had about 35 visitors, including the Governor who signed his name in the visitors book.

Sir George comes here nearly every day & is quite at home in the Museum. He generally comes into my room.

The other day I reminded him of my introduction to him 4 years ago in Auckland & he was very civil & wants me very much to take my little boy over to see him as he is so fond of children. Talking of children I may as well inform you that on New Years day I was presented with a substantial gift in the shape of a little baby boy. Rather an important day for a birth, was it not? Mrs Gore is getting on nicely & has been up the last two days a little. Dr Boor attended her & we have a first rate nurse. I am glad to say that every thing went off satisfactorily.

My sister arrived yesterday from England via Canterbury she had a good passage of 92 days & got into Port Lyttelton on 1st Jany & came in here in the *Wellington* SS. So you may think we are rather pushed for room in our diminutive Cottage.

With kind regards to Buchanan whose long & interesting letter I received
I am yours sincerely
Richard B Gore

Dr Hector &c &c.

My sister did not bring your parcel from Mrs Vause as it was not ready.

⁷¹ Policeman.

M7. Mantell to Hector, 9-1-1866

Te Papa MU000147/001/0097

Wellington

9 Jan 66

My dear Hector

Did I tell you what a job I had with Hocksterswivel's⁷² last two plates? Of course I would not let you waste money on photo-gramming them, but elaborately traced them with some infernally patent brown fluid intending to shade with a brush. Found on attempting this last stage that every line of tracing washed off clean. Haast writes for them & I shall send them by hand when one goes. He says the 2d vol for all is now on its way out & that his copy is imperfect – one perfunctorily got up for the Druary den expose. Goodnight.

15 Jany. Donald says there's a mail at 11 so here goes.

Buchanan's first lot of plants were put in the ground in their sap as he wished and will mostly die as might be expected – The second lot received on Saturday not being doomed by any such orders Rayer has planted (about 60 he says) and I guess they'll die. But why you should send Pepees & other indigenous trade to Wellington where they abound is more than I can make out.

The Hostus Danipus[?] which came with the first plants was in a dreadful state of mould.

I am sorry you were imposed upon by any as a ----- self sacrifice on account of the Museum. Don't be alarmed on that account. I think of joining the Nelson trip on Saturday.

Casualties have afflicted us lately. Skey's water pipe has broken down & no wonder as it was quite unequal to the strain. And one of the panes of the green baize doors has been & gone & busted itself & no wonder.

I wish you no worse weather up there than we have here though this is the first fine day we have had since yesterday. I rose early & broke fast ditto this morning that I so might send you long stave but after breakfast I had --- ----- till I sat down to this at 10.10 – let that be my excuse.

I believe that scoundrel ----- the Supt. of Auck has been here but I have not seen the beast. Have you any idea when you will return. No hurry, for you are right not to waste what you have already done by it.

Donald has decided (like a fool) on resigning when you come back as he does not like the work (& hardly does it).⁷³ If he is in a hurry (which he is not yet) I'll let him go & use Rayer temporarily till you come.

M

⁷² Ferdinand von Hochstetter

⁷³ Donald was a field-hand who accompanied Hector to Wellington from Otago.

Burglary at the Colonial Museum

The first burglary at the Colonial Museum occurred on Thursday 1 February 1866, only a few weeks after it opened. The robbers had little trouble – they drilled a hole with a brace and bit, the bolt was drawn and the front door opened. The *Evening Post* of 2 February 1866 commented that, “From the lone position of the building, and its unprotected state, the wonder is that it remained so long without being pillaged”.

It was reported that property belonging to Dr Hector and Mr Mantell was taken, including chronometers and field glasses. Other items stolen included a lock of Napoleon’s hair, a silver medal of Oliver Cromwell, a shilling of Queen Elizabeth’s reign, and a poumanu mere and other ornaments.



£100 REWARD.

Police Office, Wellington,

2nd February, 1866.

WHEREAS on the night of the 1st inst. some person or persons did feloniously enter the MUSEUM, Thorndon Flat, and did steal therefrom certain valuable property : Notice is Hereby Given that the above REWARD will be PAID to any person or persons who shall give such INFORMATION as may lead to the CONVICTION of the offender or offenders.

(Signed) FREDERICK ATCHISON,

Inspector of Police.

A reward of £100 (worth \$10,640 in 2013 value) was offered for the recovery of the stolen goods. It did the trick. James Young, a prisoner arrested for another robbery, confided to his cellmate that he had broken into the museum, and told him where the stolen goods were hidden, in a nearby unoccupied house. All the stolen goods were recovered. James Young pleaded guilty, and was sentenced to ten years in prison for the burglary at the museum, at its expiration a further four years for the robbery of a dwelling house.

M8. Mantell to Hector, 2-2-1866

Te Papa MU000147/001/0106

Sidney Street
2 Feby 1866

Sir,

I hereby give you notice of my desire to withdraw all my deposits at present in the Colonial Museum.

Walter BD Mantell.

To the Director of the Geol. Survey of New Zealand

Received the above action Feb. 2. 1866

For Dr Hector
Walter Mantell.

M9. Mantell to Hector, 4-2-1866

Te Papa MU000147/001/0107

Wellington
4 Feby 1866

My dear Hector

It is needless for me to tell you how sorry I am for your loss. As to the recovery of the stolen property that, I fear, is hopeless. The Government as you will see by the advertisement has offered a reward of £100 – but I doubt whether it expects to have to pay it. Beyond one or two ponamu adzes deposited by Lyon, a collection of gems by Mrs Battersbee & a carved adze handle by Sir George Grey the property stolen is yours & mine. In both cases there is (as yet) room for consolation in consideration of what is left. Your desk was untouched – theodolite, photographic apparatus & lenses etc. I estimate your loss so far as money value goes as not exceeding £100 – which inasmuch as the instruments were essential to the Dept & furnished by you the Govt. is in honor bound to make good. How tight & compulsory that bond may be, God knows.

Monday morning. The mail closes at 11. Gore will send you the printed notices issued by the Govt.

Since you left I have had a renewed discussion with the Govt. as to its responsibilities for deposits & Stafford yielded so far as this – that Govt. wd be responsible against theft to the amount it could insure against fire. He also admitted that some watch should be kept over the building & I left him debating with Gisborne (I think) whether the Govt. Buildings watchman should extend his beat or some other means be adopted for the security of the building. It would seem that nothing was done.

A stove is sanctioned & I suppose the erection of it will begin this week.

A letter dated 14 Jan was received by Gore from Buchanan but my last from you is 1st Jan. I expect you back by the end of March.

I had a very friendly note from Weld two days ago – in which he sends special greetings to you.

Well, I'm too disgusted to write more.
Matara.

M10. Gore to Hector, 7-3-1866
Te Papa MU000147/001/0122

Wellington
7 March 1866

My dear Doctor,

You will be glad I am sure when you hear that all the articles stolen from the Museum have been recovered. I suppose Mr Mantell is writing to you on the Subject. There is a large letter going to you today containing a lot of analyses of Skey's & some letters.

You know the Speakers late residence close to the Museum. It has been unoccupied until within a day or two by any one except a labouring man who was paid 14/- per week for taking care of it. Mr Stafford asked Mr Mantell the other day if he could recommend any one who might live there, he mentioned it after to me & I said I should like it especially as we were so crowded at the Cottage. Mr Mantell kindly wrote & asked Mr Stafford if I should go into it & he immediately said yes provided I was willing to go out on a weeks notice as the Speaker may want it for a short time during the Session.

Mr Mantell at Mr Stafford's suggestion has allowed a Mr Gray a govt. Clerk & his wife to live in the Cottage on the understanding that if I get a weeks notice to quit he will get the same so that I can have the Cottage again. Mr Stafford seemed quite glad to give it to one in your Department & indeed he told Mr Huntley that it was likely the Speakers house would be given over to this Dept. altogether. Mr Mantell quite approved of my asking for it & I hope you will think well of it.

Mrs Stafford took nearly all the furniture out of it but with what was left & our own things we have made the house very comfortable.

We expected Buchanan to day by the *Lord Ashley* but he has not arrived.

Your cases of Books (3) have come by the *Epsom* but are not yet landed.

I am dear Doctor
Yours faithfully
Richard B Gore

Dr Hector &c.

M11. Mantell to Hector, 9-3-1866

Te Papa MU000147/001/0123

Wellington
9 March 1866

My dear Hector,

I need not tell you that your Chronometers & so forth are recovered as Gore has done that. Barring some damage to the lock of the larger one & that arising or which may be found to have arisen from the want of punctual winding they are uninjured. Some of my rubbish is a little broken & scratched but otherwise it is all right even to the lock of hair.

Buchanan has arrived, very seedy. Taking into account the time he might have to wait for a chance to the Kaikoura the season may be considered too advanced for him to explore it for Alpine plants. He says you had some idea of sending him to Greymouth fossilhunting but is not sure & you have said nothing on the subject. From him I make out that unless you were delayed you might be here by the 18th. Allowing a week for delays 25th & another for lord knows what – the beginning of next month.

The Governor wanted to persuade you to go with him to Taupo & I promised to tell you – I have done so.

Gillies called yesterday on his way South to fetch his family; but could give no news of you of course.

I enclose a note from Crawford (J.H.) which I received yesterday. The boxes have not come, I suppose they are these (?) missing of yours. It was imprudent to address them to me by name unless you had taken every precaution for having them forwarded past Auckland – there are not three men there who would do the friendly act which friend Crawford has done for anything addressed to me. I shall remit the amt. to him as I must write to thank him and you might not see him when at Auckd.

Pray by all means preserve the note for me as it is too good an illustration of interprovincial affection to be lost to admiring audiences.

I am in enjoyment of a sharp attack of lumbago & a deep seated thorn in my right (or write) forefinger so you wont expect a long digression on parish news. Besides I shall soon see you.

Remd. to Fenton & to Crawford if you see him - & Rogan – that's all I think.

Yours truly
WM

P.S. Believe nothing of Gen Chute's expedn. or of the "Patriotic" fund till you hear the other side.

Te Papa MU000147/001/0091

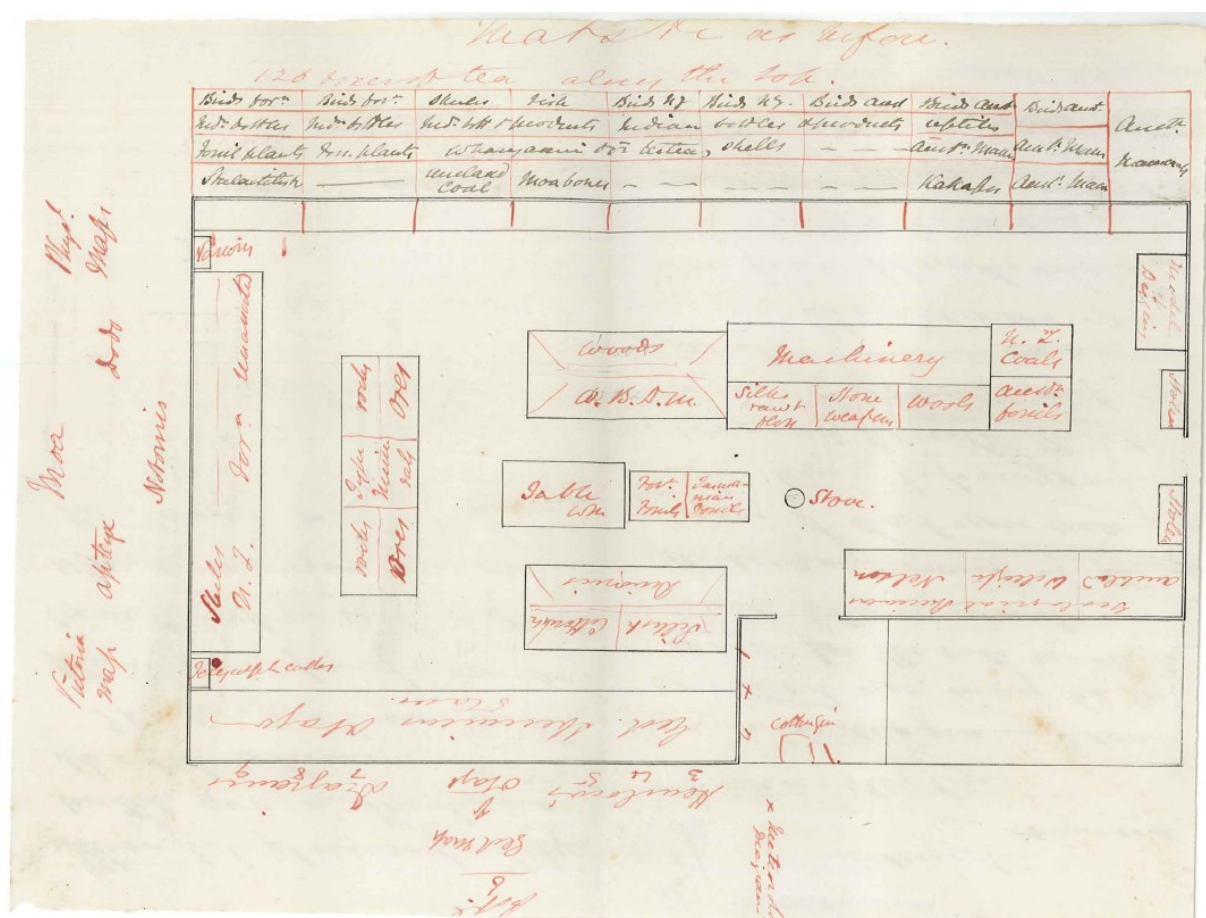
My dear Hector

This diagram I send you that you may be prepared for the vile revolution which I have made in the arrangement of the cases, & that you may have time before your arrival here to think it over & devise improvements.

There are as you see five blank shelves in the wall cases – and the whole contents of those cases require a rearrangement which I thought it unsafe to begin until you or Buchanan should return.

The proportions in this plan are far from accurate, it is only a sketch which as you know the cases will suffice

He ori
Na touhoa
na Matara



M13. Mantell to Hector, [15-3-1866]

Te Papa MU000147/001/0124

Wellington
15 March 66

My dear Hector

The man came yesterday to put up the stove, having at last received the extra piping from Otago.

As your return is now imminent and as he says it is all the same to him I have deferred the erection of the affair till you come that you may yourself select the site for it. & it has occurred to me that you might prefer to have it in the drawing room.

In writing to England I have said that you have found the Geology of the Northern Peninsula very interesting but have been obliged to add that you have not yet communicated the reasons which have brought you to that opinion.

I hear Sir D Monro is in town, so I fear your chance of the house is damaged.

Col. Warre & Sewell left yesterday pulled back for England.

No more TeDeous [sic] banquets to convert atrocities into victories. The Governor being away this art languishes - not so the "Patriotic"(!) fund.

Whereunto they say fully £1000 has been contributed! Surely after this England will never insist on the £40 a head.

Your boxes not landed ex *Epsom* yet. We have those ex *Ivanhoe* which Crawford ransomed come to hand.

Wishing you at least one happy return
Yours truly
Matara.

M14. Mantell to Hector, [23-3-1866]

Te Papa MU000147/001/0133

Wellington
23 Mar 66

My dear Hector

Your letter of 18th from Auckland received yesterday, and today two boxes which Buchanan says come from the B of Islands. They contain dried & rather moulded plants a few rocks & rotted specimens of fossil vegetables.

You say you have yet to visit Kaipara, Coromandel & Aotea first joining Sir George Grey in his tour in the interior. And the Auckland papers say you are to do the East & West coasts before coming south. This may probably occupy you for the remainder of the season. The “policy” of your northern friends wd. seem to aim at getting as much as possible out of you before the blackguard house meets in order that they may combine with the Otagonies to abolish the department. If this be their wish it only furnishes stronger reason for you doing all you can in those parts before you return south. The short space of summer now left would suffice only to give you a most cursory view of any other part of the colony – and it would be a pity to waste more than necessary of it in voyages to & from these cursory glimpses. So *perge puer*⁷⁴ with my blessing.

I am sorry that our letters have missed you. I fear they are stuck up somewhere in those savage regions for “P. postage” or something of the sort. As to the returned rubbish (mine I mean) Gore will be able to assure you that you might fearlessly have faced me on the very moment of discovery or any other moment. If he don’t, Sir George will. Why it was through that rubbish that your more precious chronometers &c. went astray. I am gradually removing my belongings from the Museum lest others might be tempted – for if men will break into houses for pounamu one can’t tell what trifle cd suffice to induce them to do that thing.

“Govt” has laid on another watchman since the affair and has authorized a new door which however I don’t feel disposed to order till you come back. Two window sashes have been opened and the air inside is quite breathable now. The stove as I told you waits your orders.

Had I not been aware of how highly you valued Donald I would have given or granted him his congé long ago. He has been in a manifestly discontented state almost since you left. Says he wants more intellectual occupation. Wants to go home & so forth. To me he seems a man whose conceit exceeds his intelligence and who is blessed with a sullen & vindictive temper. I am not aware that I have myself given him any cause of offence: but I must have done so for I find the shells which I had laboriously arranged according to Woodward (& it took me ---- as I had 3 or 4 days of hard labour) have all been recently so inextricably shuffled by him as to make it more difficult than ever to rearrange them. At the time of the robbery I was engaged day by day in arranging & naming my collection. That work I dropped in disgust. On the recovery of the things was about to rescue it, when I discovered the evanescent nature of my arrangements among the shells. I now retire with philosophic indifference. Enough of all that. Donald shall not go – but I cannot undertake any more with regard to him than to leave him as now under Mr Gore’s orders.

There are lots of letters in the office which have been waiting your return but that has now been so long deferred that I think you had better have them.

I am going to take Mr Gore out tomorrow morning to look at cricket.

Your boxes (2) from Stanford came at last so I had my books turned out of the case in your room and yours put in their places. This I did that you may immediately on your return be able to refer to any of them. Mine are at present on the side table in the drawing room

⁷⁴ Latin: “Go on with your child”.

(museum) that you may select such as you still desire now that your own are come. Have I done right?

Do you want news? The Hutt Races are over – and Gore has a copy of the “Jurors Reports” – and a frog was brought me for sale today – and croquet is going out owing to the cold – and everyone asks me when Dr Hector is coming back and gets various answers – and the “Ministry” is now reassembled here – and the weather is fine – and I have a NSW magpie – and – see the papers.

Yours truly
W D Mantell

P.S. and the Club is now formed by Donacher who not having a licence yet will find he only keeps a sly grog shop.

Part 4: The outcome of the Northland expedition

As soon as Hector arrived back in Wellington in May 1866, he was plunged into a backlog of administrative work. The results of his fieldwork in Northland were never written up as a comprehensive report, as he did for fieldwork in later years. This concluding section documents what happened to the results of his Northland fieldwork.

Geological map of Northland

One of Hector's aims in setting up the Geological Survey was to publish coloured geological maps of different regions at 1:250,000 scale. He had already produced such a map of Otago Province⁷⁵. On his return to Wellington, Buchanan was given the job of drawing up a geological of Northland⁷⁶ – clearly what Hector hoped would be the first of a series.

Buchanan compiled a detailed topographic base map from all the information available from existing survey records, and then drew geological boundaries on the map under Hector's supervision for the area north of Whangarei as well as the eastern coastal strip as far south as Kawau Island. The result was a geological map showing the main elements of Northland geology including basement greywackes on the eastern coast, complex Cretaceous and Tertiary sediments and volcanic rocks, young lava flows in the Bay of Islands, the dune belt north of Kaitia, and the harder rocks that make up North Cape.

The map shows the route taken by Hector and his party, so it is possible to trace exactly what outcrops he visited. Many of the coastal outcrops can still be seen today. Hector numbered many of the outcrops, and gave a list of geological observations on the side of the map.

Two copies of this map exist, both stored at the Geological Survey for many years and now held at Archives New Zealand⁷⁷, and a copy is reproduced as Figure 2. There is a single black lithographed sheet containing the topographic base, geological boundaries, legend and lettering, and the colours, representing different rock units, have been added by hand. It is not clear if these sheets are proof copies of a map that was never published, or whether there was a small edition but few copies have been preserved.

At least one additional copy was prepared that was sent to the Auckland Provincial Council (see below).

Financial constraints meant that Hector was not able to publish the map of Northland, nor did he later attempt to publish full colour maps of other regions.

⁷⁵ Nathan, S. 2011: "James Hector and the geological map of Otago". Hocken Collections, University of Otago: <http://www.otago.ac.nz/library/treasures/hector/index.html>

⁷⁶ What we call Northland today is called "the Northern District of the Province of Auckland" on the map.

⁷⁷ Archives NZ reference no. ABLP W4464 Box 33 (R17917102)



Figure 2: Geological map of Northland, compiled by John Buchanan and James Hector in late 1866. This is one of two hand-coloured copies held by Archives New Zealand (reference ABLP W4464 Box 33).

Coal Deposits of New Zealand

Because of the interest in locating coal seams that could be economically mined, Hector was asked by the government to prepare a summary of coal deposits throughout New Zealand as soon as he returned from Northland. He worked on this over the winter of 1866, and it was to become the first publication of the new Geological Survey. “First General Report on the Coal Deposits of New Zealand”⁷⁸ was completed in October 1866, and immediately published by the Government Printer. Hector described the coal seams he had seen in Northland on pp. 21-23 and 34-41, including analyses and discussion of the gas-making properties of different coal seams. He was optimistic about the possibility of finding further coal seams in Northland, but cautioned that drilling would be needed to locate and test coal seams.

In 1866 the mine at Kawakawa was the largest in the country. Transporting the coal was straightforward – a 2.5 km tramway to the tidal Kawakawa River from where it was shipped to Auckland and sold as Bay Coal.

Information sent to the Auckland Provincial Council

No specific report appear to have prepared for the Auckland Provincial Council, but the Daily Southern Cross of 15 November 1866 reports that the Superintendent submitted a number of documents to the council:

1. First general report on the coal deposits of New Zealand.
2. Geological Sketch map of the Northern district, province of Auckland.
3. Geological map of the Bay of Islands District.
4. Plan showing the line of out-crop of coal &c. at Kawakawa
5. Plan and section of the supposed line of dip of coal, showing also the relative depth of the principal borings and the strata passed through
6. Enlarged section (Kawakawa coalfield) showing the strata passed through in Graham’s shaft, and in the boring No. 18.

Items 1 and 2 are referred to above, the remaining four maps and sections have not been located. It is possible that copies may be held in the archives of the Auckland Provincial Council.

Geological Maps of New Zealand

Hector produced a geological map of the whole country in 1865, based on the records he had at hand. For the northern part of the North Island he relied on maps prepared by Hochstetter, who did not travel far north of Auckland, so there was little information on the geology of Northland. The 1865 map was never published, but Hector produced a revised version in 1869 – the first published geological map of New Zealand – that incorporated the results of his fieldwork in Northland.

⁷⁸ Some years later it was retrospectively numbered as the first volume of the annual *Reports of Geological Exploration*.

Letter to F.W. Hutton

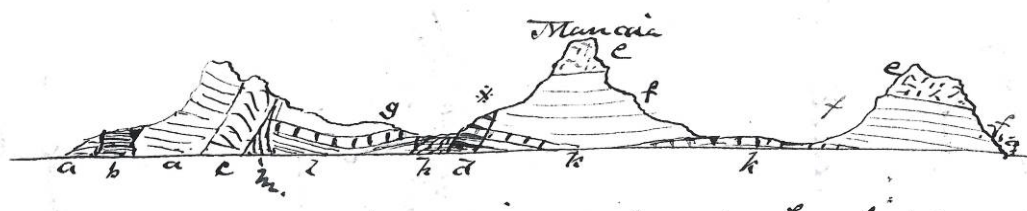
The only detailed description of Northland stratigraphy is given in a letter from Hector to F.W. Hutton in October 1866⁷⁹. Hutton was hoping to be employed by the Auckland Provincial Council, and Hector wrote to advise him about the results of his trip earlier in the year.

S.S. Wellington
24.10.66

My dear Sir,

Many thanks for your note of 15th inst. with the notes & sections of the Whangarei District. I have seen most of the sections you describe & on the whole agree with you – except as regards the granites & gneissic rocks of which there are none so far as I know in any part of the N. Island. However some of the Sanadine porphyries of the Early Mesozoic period simulate crystalline rocks very closely, but of course you never have the Silica as Matrix.

The Coal at the heads is a mixture of Palagonite tuffa & Pyritous shale, with a small amount of Bituminous matter. Old Aubrey[?] would not believe what I said & I did not bother arguing much about it. The following is the section of Mania as I made it out.

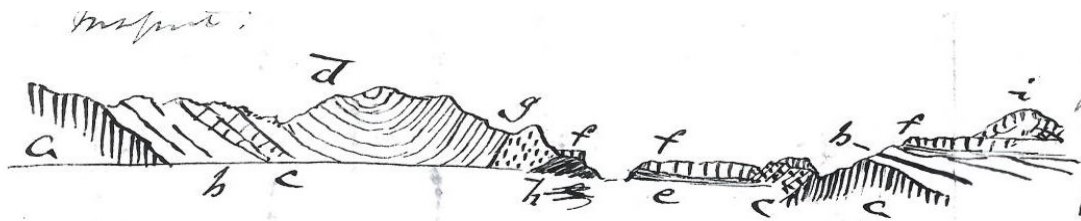


a. Trachyte Tuffa. b. Dolerite Dyke. c. Trachytic Dyke. d. Dyke of Trachyte Porphyries with h. Trachyte Tuffas with Mica & also Andesite. e. Trachyte Breccia. f. Waitemate series (Tuffaceous). g. Clay shales. k. Limestones. l. Greensands. m. Palagonite Tuffas.

I did not observe any palaeozoic rocks, but it is not improbable that they exist as you suggest in your little map as along the W. face of the slope from the Mania range the bright red soil looked very like that which in other parts of N.Z. is characteristic of the Maitai slates & Serpentine Dykes. The section at the Coal Mine is very interesting, but if you visited the Abbey[?]⁸⁰ you must have seen the Crystalline Limestone & grit dipping right under your so called white fine grained granite at 33°. The hill is composed of Andesite & Trachyte Tuffas, & belongs to the Upper Waitemata series I suspect.

⁷⁹ Hocken collections, University of Otago, MS-0443-3/4/25. This letter is also reproduced in *GSNZ miscellaneous publication 133F*, pp 9-10.

⁸⁰ Probably a reference to the Abbey Caves, NE of Whangarei.



a. Slates &c. b. Greensands with Coal. c. Limestones. d. Waitemata series? e. Pliocene Tuffas. f. Pliocene Trachytes. g. Andesite dyke & h. Trachyte Tuffa. i. Trachydolerite Cone (Manaia).

The first[?] lignite which you send is often seen in thin veins in the ferruginous sands. In the same quaternary formation on the N. & West Coast there are massive[?] seams of it 8 & 12 ft thick. I doubt by the way if they should be considered quaternary as they are the remains of a great interior continental system of Basin Deposits, now broached by the sea consequent on the submergence of the land & coated over by true Quaternary deposits. The same basin Deposits are ----- developed in the South Is. & constitute the Older Gold Drift.

The section at Hikurangi is my sample (see over).



a. Aphanite & Greywacke slates, with Siliceous & Haematite veins. b. Brown Sandstone, Siliceous cherts & nodules with Fossil wood Slates & Grey ----- with coal seam. 5ft 2ft 2.6 3ft & 2.6. c. Quartzose conglomerate. d. C--- Hard S----- & Tuffaceous clays. Waitemata series ? unconformable on c. e. Trachyte dolerite rising into wooded cone f.

The Geol. sketch of the whole district and details of the Kawa kawa block went to Auckland some weeks ago & I am sure Mr Whitaker will be glad to shew them to you. If you go in for Northern Geology what I would warn you against is the protean[?] form of the tertiary Trachytes & Metamorphosed Sandstones that occur among the slates. Hand specimens are often mistaken for granitic rocks – even W. M. Clarke of Sydney made this mistake with regard to a Wellington Metamorphic Sandstone.

The fact is we require another name for the crystalline Trachyte Porphyries very badly. There is no doubt that they do fulfil the place of granites among the Volcanic as opposed to Plutonic rocks. I am sorry the Synopsis is not printed yet, but by next mail I shall send you something about coals. I am going to land at Taranaki & wait till this steamer returns, looking at the oil wells.

Ever Yours Sincerely
James Hector.