Selected documents relating to the life and work of James Hector (1834-1907)

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CONTENT

Introduction and acknowledgements

James Hector was the dominating personality in the small, nineteenth century scientific community in New Zealand. Appointed as provincial geologist in Otago in 1861, and later becoming the first professional scientist employed by the central government in 1865, Hector quickly established the New Zealand Geological Survey (now GNS Science), the Colonial Museum (now Te Papa), the New Zealand Institute (now Royal Society of New Zealand) as well as becoming a trusted government advisor.

In preparing a biography of James Hector[1], I consulted a large number of documents, many of which have been transcribed by me or by others. Several collections of letters to and from Hector have already been published, mainly as parts of GSNZ Miscellaneous Publication 133 (see list on opposite page). This volume represents a final compilation of letters and documents that were not included in the earlier published collections, but which I felt might be of interest to future researchers. It includes Hector's MD thesis, *Sketches of evidence concerning the antiquity of the human race*, a lengthy account of an exploring trip in the headwaters of the Matukituki valley in 1863, a series of memos regarding the running of the Geological & Meteorological Department, and papers relating to Hector's employment and retirement.

A number of people have helped with transcribing different documents and deciphering Hector's crabbed handwriting, especially Rowan Burns, Mary Hawkins, Esme Mildenhall and Judith Nathan, and I am most grateful for their patient and conscientious assistance. In addition, I would like to thank:

- Chris Hector, who obtained a copy of his great-grandfather's MD thesis, and allowed me to consult it;
- Te Papa archives, Hocken Collections at the University of Otago, and the Alexander Turnbull Library for permission to publish transcripts of documents they hold;
- Jennifer Twist (Archivist at Te Papa) and Kristin Garbett (Librarian at GNS Science) for their help in finding letters and documents;
- GNS Science, for allowing me the use of space and facilities so that I could complete this project;
- Judith Nathan, for checking the final manuscript.

[1] 'James Hector: Explorer, Scientist and Leader' by Simon Nathan. Geoscience Society of New Zealand, 2015.

Collections of letters and other documents relating to James Hector.

As part of an ongoing study of late 19th century New Zealand scientists, several collections of letters have been transcribed – now more than 1000 letters. These are a valuable research tool for researchers in a variety of fields, so all but one collection has been published by the Geoscience Society of New Zealand as parts of *GSNZ Miscellaneous Publication 133*, available as free downloadable PDF files from the GSNZ website, www.gsnz.org.nz – click on Publications, then Misc. Pub. Series – or click on the links below

- "My Dearest Georgie": transcriptions of 24 letters from James Hector to his wife Georgiana written in 1890 (2nd edition) by Judith Nathan & Simon Nathan, 2015. *Geoscience Society of New Zealand miscellaneous publication 133A*, 42 pages

- "My Dear Hooker": transcriptions of letters from James Hector to Joseph Dalton Hooker between 1860 & 1898 by Rowan Burns & Simon Nathan, 2012. *Geoscience Society of New Zealand miscellaneous publication 133B*, 208 pages

- "My dear Hector": Letters from Joseph Dalton Hooker to James Hector, 1862-1893 by John Yaldwyn & Juliet Hobbs, 1998. Museum of New Zealand Te Papa Tongarewa Technical Report 31, 292 pages.

- "My Dear Dr Haast": transcriptions of selected letters from Robert Langley Holmes to Julius Haast between 1864-65 and 1868-70 by Rowan Burns & Simon Nathan, 2012. *Geoscience Society of New Zealand miscellaneous publication 133C*, 53 pages.

- The correspondence of Julius Haast and James Hector, 1862-1887 by Sascha Nolden, Rowan Burns & Simon Nathan, 2012. *Geoscience Society of New Zealand miscellaneous publication 133D*, 315 pages.

- "A Quick Run Home": Correspondence while James Hector was overseas in 1875-1876 by Rowan Burns & Simon Nathan, 2012. *Geoscience Society of New Zealand miscellaneous publication 133E*, 144 pages.

- Transcriptions of selected letters from Frederick Wollaston Hutton to James Hector and Julius Haast (2nd edition) by Esme Mildenhall, Rowan Burns & Simon Nathan, 2013. *Geoscience Society of New Zealand miscellaneous publication 133F*, 175 pages.

- James Hector in Northland, 1865-66 by Rowan Burns & Simon Nathan, 2013. *Geoscience Society of New Zealand miscellaneous publication 133G*, 57 pages.

- Letters from James Farmer to James Hector, 1876-1891 by Esme Mildenhall & Simon Nathan, 2013. *Geoscience Society of New Zealand miscellaneous publication 133I*, 133 pages.

- Selected documents relating to the life and work of James Hector (1834-1907) by Simon Nathan, 2015. *Geoscience Society of New Zealand miscellaneous publication 133L*, 69 pages.

- A bibliography of publications by or about James Hector (1834-1907) by Simon Nathan, Rowan Burns & Esme Mildenhall, 2015. *Geoscience Society of New Zealand miscellaneous publication 133M*, 52 pages.

Part 1: Autobiographical note

This is an autobiographical account of James Hector's life, that he wrote in the third person, probably about 1885. Two copies are held in the Hocken Collections, University of Otago (catalogue item MS-0445-1/04). One is the original, written in Hector's handwriting, and the other is a typescript copy later made by his son, Charles Monro Hector. The second copy, with a few annotations by C.M. Hector, has been transcribed, but as far as I can judge it is an accurate copy of James Hector's original which is difficult to read in some places.

C.M. Hector states that the manuscript was written in 1885, presumably based on the statement that Hector had edited the Transactions and Proceedings of the New Zealand Institute for seventeen years (starting in 1868), but apart from this the latest event mentioned is the award of the Lyell medal, made in 1877. The memo was apparently written to provide some biographical background about James Hector, and it seems to have been written from memory as some of the details are inaccurate.

The information about Hector's background in Edinburgh is questionable. Although he states that his father was a Writer to the Signet, it was actually his Uncle David (who worked in the same legal firm). The claim that his father used to read manuscripts to Sir Walter Scott seems improbable. It is not supported by any other source, and Scott had finished his most productive writing before Alexander Hector became an adult. This is not to suggest that James Hector was deliberately exaggerating – I suspect that he was simply passing on family legends.

Hocken Collections, Ms-0445-1/04

James Hector

Born in Edinburgh on 16 March 1834.

Father a lawyer and Writer to the Signet: of great repute as a conveyance and reader of Black Letter deeds. He used to translate and read old manuscript to Sir Walter Scott on which he founded his romances.

Mother was a niece of Dr Barclay the celebrated anatomist, founder of the Royal College of Surgeons Museum, Edinburgh, and the teacher of Owen, Knox, Ballingall, Campbell and a host of other surgeons and anatomists of renown.

J.H. was trained at the Edinburgh Academy and High School until his 14th year. He then entered his father's office for a short term and afterwards was articled to James Watman, the actuary, for three years during which time he attended classes at the University and School of Arts, having at a very early age shown a decided bent for chemical and Natural History studies.

In November 1852 he gave up all office work and matriculated at Edinburgh University as a medical student, which at that time afforded the only avenue to scientific study. Throughout his course he gave the largest share of his work to Natural Science and particularly geology and acquired the personal friendship of many eminent men, particularly of Professors Edward Forbes, Goodsir, Balfour, Gregory under all of whom, at various times he served as private assistant.

From the age of 13 every summer holiday had been occupied with long walking excursions in the Highlands of Scotland and also in England and Ireland so that he very early acquired the spirit and endurance of an explorer and the habits of quick accurate observation and careful collection.

This led to his being always selected by Prof. Balfour, though only a student of the class, to give an account to the Botanical Society of the geological and physical features of the ground gone over in the course of the Saturday botanical excursions for which Balfour's class was so famous. J.H. thus acquired a position of leader and authority on geological matters among the students.

There being no distinct chair of geology in the University he attended the extra-academic lectures on mineralogy, geology and palaeontology of Macadam, Rose and Page.

After completing his medical studies and hospital attendance he took his degree of M.D. in 1856 passing the whole of the examinations in one year as his devotion to Natural History had prevented him spreading them over several years according to the usual custom.
His graduation thesis was on the Antiquity of Man, being the same title as that of the well-known book written by Sir Charles Lyell in 1863.

For a short period after attaining his degree J.H. acted as one of Sir J.Y. Simpson's assistants but in March 1857 he was, on the recommendation of his University, selected by Sir Roderick Murchison, then Director-General of the Geological Survey of Great Britain as surgeon and geologist to accompany a Government expedition to explore and report on that part of British North America lying west of Lake Superior.

On this work he was engaged for 4 years, including a few months employed in preparing the voluminous report, which forms a Parliamentary Blue Book illustrated by maps and charts. The leader of the expedition was Captain John Palliser but the chief share of the scientific work fell on J.H.

Besides the regular summer work of the expedition J.H. made arduous Winter journeys on foot with snow-shoes and dogs so as to thoroughly master the features of the country at all times of the year.

On these journeys he was accompanied by only two of the men and for months they slept every night in the snow with the temperature sometimes 50 degrees below zero. (Fahrenheit degrees)

Each winter season during the expedition J.H. walked over 1000 miles in this fashion, living on pemmican and any chance game that might be encountered.

During the early summer months the expedition traversed the open Prairies and attention was devoted to the exploration of the Rocky Mountains where J.H. discovered and explored five different passes ascertaining their altitude and surveying their features.

One of these passes, which is named after an accident that nearly cost him his life, "Kicking Horse Pass" is that chosen for the great trans-continental Canadian Railway.

The extent of country traversed by the expedition and mapped by Dr Hector, both topographically and geologically, is described on the title page of the blue book as that portion of British North America which in latitude lies between the British Boundary (49 degrees) & the water-shed of the frozen ocean and in longitude between the western shores of Lake Superior and the Pacific Ocean.

The expedition occupied the years 1857 – 1860.

A great part of that country which was then untrodden, except by Indians, is now partially settled and traversed by roads and railways. The difficulties which beset it's explorers have all disappeared and elaborate surveys have been made in comparative ease and comfort. These have confirmed the accuracy of the work done by J.H. and the justness of his deductions respecting the structure of the country and it's availability for settlement.

At the close of the expedition J.H. before returning to England examined and reported on the coal mines of Vancouver Island and made extensive journeys to acquaint himself with the gold fields of British Columbia, California and some of the mines of Northern Mexico. He returned by Panama and the West Indies and on reaching England, besides his official reports, he laid the results of his work in the various branches of research before the different scientific societies to which they were of interest.

For his geographical work he was awarded a gold medal by the Royal Geographical Society in 1860 (followed by the Founder's Medal in 1891. CMH)

He then obtained two offers of employment from Sir Roderick Murchison. One to undertake a mission as political agent and geologist to Kashmir, with large emoluments in prospect, and the other as geologist to the Provincial Government of Otago in N.Z.

Guided by Sir R. Murchison he chose the latter as likely to afford the best field for making substantial advances in geological science.

In this year he examined the whole of the Province exploring the mountain regions and Sounds of the West Coast under great hardship and privation.

His work, as recorded in the reports and maps he submitted, embrace every branch of scientific research.

In 1864 he was selected as Commissioner to make a rapid tour of the Colony to report on how its resources could best be displayed at an exhibition proposed to be held in Dunedin in the following year and much of the success of that first N.Z. exhibition was admitted to be due to the energy of J.H.

At that time the Colonial Government (the Weld Ministry being then in power) secured his services from the beginning of 1865 as Director of the Geological Survey for the whole Colony and soon the whole country was traversed by himself and the small staff of assistants which was afforded to him. His attention was not confined to geology but extended to everything that bore on the development of the resources of the country.

The annual reports which have appeared regularly since 1866 deal for the most part with questions of practical utility. In 1868 he was instrumental in founding the N.Z. Institute and

for 17 years has performed as a labour of love, the onerous work of its Manager and the Editor of the copious volumes of Transactions which have appeared each year.

His practical knowledge of the resources of the country may be judged by a perusal of his evidence given before Select Committee of both Houses of Parliament in 1870 on Colonial Industries and the voluminous reports and documents that are scattered through every volume of the parliamentary journals.

In 1875 he visited England and the Continent and in 1876 he represented the Colony of N.Z. at the Centenary Exhibition at Philadelphia. He was also the executive commissioner at the Sydney and Melbourne Exhibitions in 1879 and 1880.

One of the most condensed, but at the same time complete, works on the Colony is the hand-book which he originally prepared for distribution at the Sydney Exhibition but which has since passed through several editions as a separate publication. J.H.'s services in educational matters and especially in the organisation of Higher Education require mention as they have led to his unanimous election as Chancellor of the N.Z. University.

In 1857 J.H. was elected a Fellow of the Royal Physical Society:
In 1860 " " " Royal Society, Edinbore:
In 1860 " " " Geological Society, Lond:
In 1866 " " " Royal Society, London,
and also of the Linean, the Zoological, the Statistical and Meteorological Societies of London. He is also a member of many learned Societies on the Continent, in America and in Australia.

In 1874 he received, by permission, from the German Emperor the order of the Golden Cross.

While in London in 1875 the Secretary for the Colonies secured for him the Order of C.M.G. in recognition of his services in America and the Geological Society elected him Lyell Medallist for the year.

The following note was added by C.M. Hector. Note that some of the dates and details he gives are not correct.

The above sketch of his life was written by J.H. himself in 1885.

His services to the N.Z. Institute, as Manager (latterly Director) and Editor of the Transactions extended over 35 years.

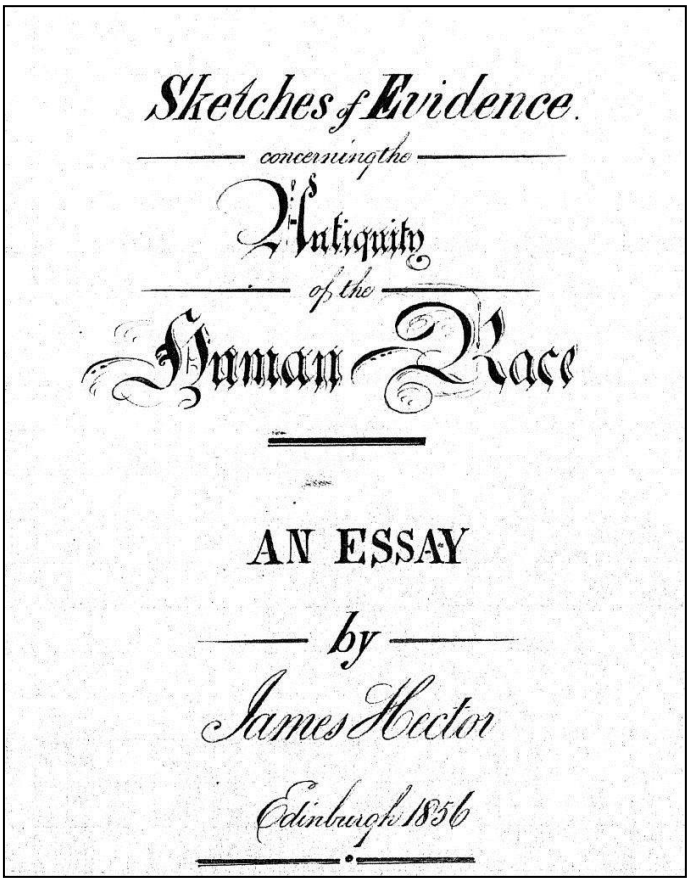
In 1886 the honour of K.C.M.G. was conferred upon him. He continued as Chancellor of the University from 1885 till 1903, and Director of the Geological Survey till 1904. On retiring in 1904 he paid a short visit to the scenes of his early labour in the Rocky Mountains and was able to travel by rail through the passes which he had discovered nearly 50 years before.

He was received by with acclamation by the people, but the Cup of Joy was dashed from his lips by the sudden death of his son and companion at Revelstoke on the Columbia River.

He died at his home, near Wellington, in November 1907.

Part 2: Hector's MD thesis, 1856

In the 1850s, Edinburgh medical students had the option of completing a research essay or thesis after their examinations that would entitle them to the award of the higher degree of Doctor of Medicine (MD) rather than the usual Bachelor of Medicine (MB). James Hector took this option with a thesis on a topic that seemed to have little connection to his medical studies, but was probably a topic of discussion among his teachers and contemporaries at the university. Unfortunately there is no indication who was advising him (or whether he did, in fact, have any formal supervision). The essay has been written out by a copyist in copperplate handwriting.


Sketches of Evidence
concerning the
Antiquity
of the
Human Race
AN ESSAY
by
James Hector
Edinburgh 1856

Prepared only three years before the publication of the first edition of *On the Origin of Species* by Charles Darwin, Hector's essay provides some insight into the debates were underway in academic circles about the nature of mankind, and how long humans had existed. It is clear that he had thoroughly read the literature available to him, and there are frequent references to the 9th edition of Lyell's *Principles of Geology*, published in 1853.

After evaluating evidence of past civilisations and buried skeletons, Hector discussed the incompleteness of the fossil record, but there is no suggestion that humans had evolved from other species. He was cautious in drawing conclusions, but ended by saying, "However it is evident that we must be prepared to grant for man a much higher antiquity than has hitherto been allowed to him".

Sketches of Evidence concerning the Antiquity of the Human Race

An Essay by James Hector, Edinburgh 1856[2]

"Now as to myself, I have so described these matters as I found them and read them, but if anyone is inclined to another opinion about them, let him enjoy his different sentiments without blame from me"
Josephus
Antiq: Jud: Lib: X.II

[p. 3]
In the following essay I propose attempting to arrange in detail the facts which have been ascertained relative to the age of the Human Race. No long period has elapsed since such an enquiry would have been considered complete if it had begun and ended with a critical summation of the Hebrew Chronology as given in the Old Testament, but the unceasing and rapid advance of Physical Science has thrown so much new light upon the "Method of Divine Government" in the Material Universe as to impress the mind of every unbiassed person with the fact that the Scriptures have been given for guidance to man in those things relative to his Moral Welfare and which have their foundations in principles beyond the grasp of the human understanding, and not as a text book to guide him in the pursuit of the knowledge of those things which are within the range of his faculties, and which by searching he may find out. The Bible must be considered as a system of morality addressing itself to man's soul, and not [p. 4] as a system of Cosmos addressed to the Intellect of man, in which the doings of an all-creative Being are set forth. I shall therefore enter into no argument concerning the facts related in the Bible, which have a bearing on the question of man's antiquity, or consider it in the least necessary, either by keeping those facts in view while following out the inquiry or by afterwards giving any explicative review of them, to endeavor to make any views I may arrive after accord with what might be deduced by others from a study of the Mosaic Records alone.

Almost as one of the results of an inquiry into the antiquity of the Human race, will arise the question of how do the earliest traces of man which are to be found testify as to his condition in those remote times more especially in regard to his Geographical distribution. But this must be considered as a collateral subject, arising incidentally to the proper Theme of this essay.

The proof which bears upon the antiquity of the human race is direct and indirect, the proof from finding mans' remains and the proof from finding mans' works. That the apparent works of man [p. 5] are to be accepted as of equal value with the remains of man's body in proving his existence at a certain place in a given time, is a dogma which must be held in all investigations of this nature, and that such may be held so with safety can be proved by shewing that the creations of human ingenuity have origin in that law of man's nature by which he is marked as distinct from all other creatures on the face of the earth, and therefore they can never be mistaken for anything else. Wherever man occurs, under whatever

[2] Hector's original footnotes have been placed at the end of the essay. His original page numbers are given in square brackets [ ].

conditions he may be found, even under those most unfavourable to his growth, development or even his very existence, he there presents characteristics which at once distinguish him from all other animals not by degree but in kind so[i] "that" in the words of Blumenbach in a report to the French Academy "a profound gulph without connexion or passage, separates the human species from every other. There is no species that is a kin to the human, nor any genus whatever. The human race stands alone." These characteristics are of a very peculiar nature, they do not exist as points of structure, although man is not wanting in as distinct specific and generic structural characters as any other animal possesses, neither do they consist in the possession of any wonderful instincts [p. 6] which are performed as functions by each individual with unvarying regularity such as is possessed in different degrees by many lower animals -man may be said to be wholly wanting in such; but that which truly characterises men, is that tendency which all possess to adapt means to ends, after a method of their own scheming, and of a more or less perfect nature according to their degree of advancement in civilization; & the following out of this tendency by a force independent from that which sustains their own being & not as a direct function as when lower animals follow the bent of a constructive instinct. This tendency remains the same in all men under whatever conditions they may be placed; the means of obeying and carrying it into effect may become more perfect, the objects for the attainment of which it operates may become more and more lofty in their nature, but the tendency remains the same whether it be developed in the construction of a rude canoe, or in the most gigantic efforts the mind of man has ever made to gain mastery over the material world. Its fruit is design – human design.

And more, every piece of human workmanship can at once be recognised by the human mind as a creation bearing the stamp of faculties, desires & wants similar [p. 7] to those indicated by consciousness as existing in its own nature: No profound argument from design is needed to prove that rude hatches, ancient canoes and other relics of races long lost must have had makers. It shall therefore, throughout this paper, be taken for granted that where evidence which does not bear the stamp of credulity and fancy, declares that a hatched canoe, or other relic was found, the witness was capable of deciding whether the said relic was a thing bearing the stamp of mans' hand, and not a mere "lusus naturae".

But before commencing any examination of the few relics that have been discovered of mans' ancient existence which partake of a more strictly Paleontological nature, and from which we should naturally expect to derive evidence of much higher antiquity than any historical records could afford, I shall endeavor briefly to show how far back in time the human race can be traced from a study of those written and monumental records which nations have left to posterity.

In the New World as might be surmised, we get no very ancient memorials of such a nature as to have required for their production, the establishment of [p. 8] nations in a high state of social civilization, but still we do obtain certain records which if not from antiquity at least from their value to the ethnologist are of surpassing interest. But we hear of the state of the nations of America even before the date of the earliest of their indigenous records, which have been preserved to us. That the existence of America was known to the Chinese nations inhabiting the eastern parts of Asia, at a period long anterior to that at which it was again discovered by Columbus, is a fact now ascertained from a study of ancient Chinese documents. Mr Norris, the Editor of the latest & posthumous edition of Dr Pritchards "Natural History of Man", mentions in a foot note to that work (page 509) that "the curious account of a voyage made to Foo-sang a country which must have been the North West coast of America in the 5th century A. D. translated from the Chinese annals by Mons De Guignes

in the 28th volume of the Memoires de l' Academic des Inscriptions (p 503) proves if genuine a degree of civilization in that region at least equal to that of the Mexicans at the period of the Spanish conquest. The narrative attributes the civilization of Foo-sang to the effects of the Buddhist religion preached there by five bonzes [p. 9] from Samarkand A.D.458"

The oldest indigenous records are those of the Mexicans. They consist of calendars calculated with due regard to the real solar year, and in connexion with which are marked the different passages of their History. They likewise consisted of historical Paintings, of which the traditional explanation was "repeated orally by native Mexicans to some of their conquerors, and to Spanish and Italian ecclesiastics". We have Humbolt's authority for considering them as worthy of credit. The earliest event which they chronicle is the division of the nations into the Toltecas, the Chichimicas and the Nahuatlacas. One of the tribes into which the latter nation was divided, formed the foundation from which the Artecas or original Mexicans, with whose records we are dealing, sprung[ii]. "The Country from which the Ioltecas issued was termed Huehueltapallan. Hence their progress began in the year 554 of our era; and this is the very oldest epoch in the History of the New World."

Having established the oldest Historical date connected with the new world, it would be foreign to the subject of this essay were I to follow further the narrative of these most interesting records, [p. 10] but I would call attention to the fact, that in the course of the narrative of migrations with which they abound, these nations, as has been the case with every other migratory nation, are mentioned as everywhere encountering human beings, as everywhere forcing their way as conquerors and displacers of aboriginal inhabitants.[iii]

Turning from the New Worlds, in so far as its historical remains are concerned, I shall now attempt to decipher from among the much contested readings of the almost overabundant but still in many cases unravelled records of the Old World, how far we may travel back through the dark night of Time safely lighted by the lamp of History.

Memorials of the growth and relations of the races, which in ancient times peopled the eastern World, have become bound up in our minds, by the powerful ties of early association, with all that we hold most sacred and holy, and if in the pursuit of this inquiry it seems at any time as if facts were being elicited, which jar with views hitherto believed in, with reverential awe, let us beware lest we have been mistaking the form for the substance & confounding the eternal Truth with the Mythical garment [11] by which it has been preserved to us. Scientific Truth can never jar with truth in things Holy.

Before commencing this enquiry I may state, once for all, that for the facts I shall relate, I have been mainly though not altogether indebted to the American Work by Messrs North and Gliddon upon the Types of Mankind a work which although to our notions it may seem a little too Polemical in its nature and bombastic in style for a scientific book, is nevertheless rich in new facts and sound reasoning and well fulfilling the object for which it was intended by the Editors two warmly attached friends of that eminent Ethnologist the late Dr Morton of Philidelphia, to the memory of whom the book is design to form a literary monument.

The Chronology of the Old World as recently developed from a study of most ancient records whether in the form of monumental sculptures, hieroglyphics or preserved writings. Taking them into consideration only, which carry us with distinctness furthest, back in time, are those of the Egyptians, Assyrians, Chinese and Hebrews. The records of the Egyptians, are of a certainty, for the most worthy of being depended on. They have as yet, of all, had the

greatest amount [p. 12] of critical labor expended upon them, and they have rewarded those labourers such as Champollion, Roscellini, Wilkinson, Bunsen and Lepsius, and many others, all whose results are held in estimation by the first authorities by exhibiting a range of certainty in Time, far exceeding that derived from any other source. The history of how the light of the ancient Egyptian memorials broke forth by degrees upon the scientific mind of modern times, affords an interesting and useful instance for study, of how slowly preconceived notions are driven from the minds of even the highly educated by the resistless advance of Inductive truth. It is right that is should be so.

Chevalier Lepsius is at present engaged in the preparation of a great work upon Egyptian Chronology and in anticipation he has put some of his results in the hands of the Editors of the "Types of Mankind". From these, as well as from other sources, they have published what may be held as representing the most recently arrived at system of the Egyptian Chronology and the results of which are as follows. First there is a period during which, time is computed in cycles, and the length of these not being [p. 13] exactly known, the duration of this period is uncertain. However from the comparatively high state of culture which the first reliable evidence indicates, it must have extended for an immense period of time. After this comes the Historical Period, commencing with the reign of Menes. This is the first of the monumental Period and from a study of the remains of those constructed during that epoch, a reliable date has been arrived at 3893 B.C. But a more distinctly marked epoch is that at which the Pyramids were erected and when tombs, which are still extant, received occupants, arrayed in such pomp and preserved with such skill, that they now, at the distance of more than 5,000 years emphatically bear witness to the mature state of civilization of the people among whom they had lived. This date is that of the 4th Dynasty of the Historical Period = 3426 B.C. From that time to the year 250 A.D. there is an unbroken chain of chronological evidence preserved in Hieroglyphics which though at first rude and ill defined in their nature become gradually more perfect and complex as the nation ripened in culture. The nature of the records from which these facts have been derived p. 14] has rendered chronology perhaps one of the most difficult of all the problems which are attempted to be solved by their means. The tombs not only furnish human remains, which are in such a state of preservation as to allow of minute osteological examination, but in most cases they are profusely covered with drawn and sculptured figures representing processions, combats, the transaction of household affairs and the like. Although rude, from a comparative examination of many of them more especially where extrinsic evidence proves that there is a relationship between the members of a series, it has been found that the artists were capable of portraying the characteristics of the features with singular fidelity. Now, from a study of a large number of these, some of which being of a national and not merely of a private character, this remarkable result has been arrived at, that different races still existing in the world such as Egyptians themselves, Jews, Negros, Caucasians and several others, are all to be distinctly recognised as having existed then and that each of these at that very distant date, presented the same characteristics in features and in osteological conformation as [p. 15] those by which they are distinguished from one another at the present day. A large section of Ethnologists, such as the Editors of the "Types" the late Dr Morton, Professor Agassiz and many others of note have from this, and from other evidence of similar character and bearing, come to the conclusion that man as existing upon the earth, constitutes a genus, which is composed of many species. Their view seems to derive support from the study of the Assyrian, the Chinese and the Hebrew chronology also, for in all these cases the evidence showes that these nations existed, as distinct and civilised nations, at periods, almost if not altogether coeval with that at which the Egyptians were in a similar state. Thus, in the case of the Assyrians, taking advantage of the labors of Layard and Rawlinson we find that the following computed dates. First on Antimonumental period,

extending from 1250 B.C. as far back as 1903 years before Alexander or 2234 B.C. A Historical period from 1250 B.C. to the fall of Ninevah 606 B.C. Again in the case of the Chinese we get a definite date of still higher Antiquity. Lepsuis is the authority in this instance. First we have an Anti Historical period [p. 16], a period where as with the Egyptians, time was marked by cycles of very uncertain length. Then comes a Meta-Historical period commencing 3468 B.C. and extending till the commencement of the true Historic period in 2537 B.C. During this meta-historic period the names of kings which are said to have reigned are evidently to be understood as standing for Dynasties. But during the succeeding period from 2637 B.C. down to the present date, there is a continuous record in which each sovereign is named. As Copy of this exceedingly curious record up to 1769 A.D. was transmitted in that year to Paris by Father Climiot, then a resident in Pekin. The Hebrew records are so mythical in their illustrations as to render any exact definition of dates extremely difficult. However authorities have agreed that Abraham's epoch was not more than 2077 B.C or less than 1500 B.C. Thus the view of the plurality of Species among men seems to gain by an inquiry into the Chronology of these nations, but while not agreeing with that view I shall not, at least at this stage of the essay enter into any arguments by which to combat it.

Summing up the Historical evidence we find that in the New World we have records of nations [p. 17] so civilised as to be able to keep memorials of their own history as far back as the 4th Century A.D.

In the Old World we have similar evidence only bespeaking a far higher state of culture as far back as

1st Egyptian 39th Cent^{y} B.C
2nd Chinese 35th Cent^{y} B.C
3rd Assyrian 23rd Cent^{y} B.C
4th Hebrew 20th Cent^{y} B.C

This closes the evidence which the ethnologist derives from facts of a purely historical nature. I shall reserve my conclusions till the rest of the evidence has been surveyed. It is a common saying that where Geology ends History begins, where Palaeontology ends, there Ethnology begins. But it must be at once evident upon consideration that this is only partially true. Geology deals with the Physical aspects of the regions of the earth, & it must be evident that if these come to have a form that is favourable to mans' existence, then they must remain unchanged, & continue to present the same features, if the human race is to prosper and make any progress under their benign influence until it attain to each a degree of culture as to each that period where the materials for history begin [p. 18] to form. Thus it is that there must be a blank in the history of every nation, from the date of their nativity, which we may suppose coeval with the last Geological on Physical change, until the time when the first historical records are given birth to.

If men are not in the earlier states of society, under the influence of a stimulus which ceases to operate upon them during the more advanced stages and if men are in the same relation at the period of infancy of a nation to the period of manhood which they are afterwards to grow up to, as the infant individual bears to the civilised and full grown man & who disputes this then of what immense duration this blank must be, how long from the birth to the first rude but successful attempt to convert transient thought & speech into symbols which are to last for ages.

Against the idea that man possesses such an antiquity as to bring him under the period of even the latest Geological epochs, has been urged the negative evidence derived by the absence of any of his remains[iv] "Not only from all strata containing a certain proportion of fossil shells of extinct species, but even from a larger part of the newest strata, in which all [p. 19] the fossil individuals are referable to species still living". In furtherance of this view it has been stated that man could not have existed during those epochs without leaving traces, if not of his remains, at least of his works. Also that fossil mammalians are found in great abundance which since then have disappeared from the living world and associated with these are found the remains of many which still exist although not always in the same locality with that in which their progenitors had lived. Therefore if man did exist during those times, how comes it that his remains are not preserved to us. However plausible this may seem, and although it is the view supported by the highest authorities both in Ethnology and Geology, still I would venture to suggest that the principle evidence upon which it rests may have origin in the analogy between the conditions of man and that of the lower animals being carried out to great an extreme. The late "Professor E. Forbes has remarked" says Lyell "[v]that few geologists are aware how large a proportion of all known species of fossils are founded on single specimens, which a still greater number are founded on a few individuals discovered in one spot. It would be better for Geology were its "students" [p. 20] to bear in their minds more prominently than they often do, the full force of the rebuke which is implied in this remark. It is only the exceptional cases that come under the cognisance of the Palaeontologist and this is perhaps excepting Birds more true of the Mammalian than of any other class of animals taken in a group, and truer as regards man than any other mammalian. The common end of all animals is to be after death, again resolved by natural processes into their elements, so that they become in due course food for plants. "Why may not imagination trace the noble dust of Alexander till he find it stopping a bung hole" asks Hamlet. But when we have the ordinary course of nature interfered with in this respect when the remains of Animals are lodged in such a position and amid such conditions, that the processes of putrifaction and decay are either delayed or are carried on so slowly, that they are kept pace with by those petrifaction, then and there only is there trace left of the former existence of those animals by which they can be identified in after times. The description given by Sir Charles Lyell of the Big Bone Lick of Kentucky U.S.[vi] where the bones [p. 21] of mastodons and many other extinct quadrupeds have been dug up in extraordinary abundance, affords a good example of how these circumstances arise which are favourable to the preservation of animal remains. Having described how the soil is saturated with a variety of salt, which cattle are immoderately fond of and how the bog in the neighbourhood of the places which abound with this soil, is so soft that a man may force a pole down into it many yards perpendicularly, he relates that within the memory of persons still living, the wild bisons and buffaloes crowded to these springs and that many of them were there mired, as still occasionally happens to cows, houses and other quadrupeds that to this day resort to the place. In regard to the extinct animals whose remains are found there, Lyall concludes that "[vii]in their eagerness to drink the saline waters and lick the salt, the heavy mastodons and elephants seem in like manner to have pressed upon each other and sunk in the soft quagmires of Kentucky". Now these quagmires certainly cannot be supposed to have engulphed all the mastodons and other larger quadrupeds which then existed but have now become extinct, and as I am not aware that any remains [p. 22] of these animals have been found, excepting under similarly favourable, or indeed I may say identical circumstances, I consider that it may be with fairness asked, what has become of the remains of the majority which did not suffer by this exceptional but for the Palaeontologist useful method of destruction? How comes it that the remains of those that lay down and died amid the success of a dark primeval forest have not been preserved to us? To mark broadly the immense differences among Paleontological

results, as far as their approach to numerical truth is concerned, I shall take a comparative view of Fossil British Birds which have been discovered in the numerical relations to those at present living in the British Isle and also do the same for the mammalian class of animals.

The results are as follows:

Fossil – Birds 10 species, Mammals 109 species
Living – Birds 237 species, Mammals 60 species

In regard to the fossil birds, it may be further mentioned, that there is only two of the distinctly ascertained species which were not found among the Kirkdale Cave deposits and therefore the majority have come under the influences of circumstances which are exceptional and very favourable to their preservation. [p. 23] Now not only all probability, founded on a comparison with the mammila but also the very fact that a few birds were preserved, argues strongly that a much larger number of the Class Aves existed during the latter Geological Epochs than we have any paleontological grounds for establishing: and we have no other way left of accounting for their absence than this, that Birds from their mode of life, are not so likely as some other animals are, at least in Britain to meet in with circumstances favourable to their preservation in the fossil state. Having thus considered some of the lower animals in this point of view and having arrived at the fact that all groups of these are not subject to equal chances of being entombed for the use and inspection of future Geologists, I shall now endeavor to ascertain whether the chance which man during the earlier epochs of his existence has of being so preserved is a great or small one. To facilitate the prosecution of the inquiry I shall consider the circumstances which may be supposed to have operated either in aiding or in preventing his preservation, as those [p. 24] which depend upon Physical Agencies and as those which have their origin in the peculiar constitution of mans' nature.

In regard to the first we have the following distinct opinion laid down "[viii]No inhabitant of the land exposes himself to so many dangers on the waters as man, whether in a savage or a civilised state and there is no animal, therefore whose skeleton is so liable to become embedded in lacustrine or submarine deposit, nor can it be said that his remains are more perishable than those of other animals, for in ancient fields of battle, as Cuvier has observed the bones of men have suffered as little decomposition as those of horses which were buried in the same grave." Now in answer to this we can oppose the fact, that however well this reasoning may apply to nations advanced in civilisation, it is by no means so clear that it has equal truth when applied to races during those earlier periods of their existence which must have preceded that time even, when they are in the state which we denominate savage. And [p. 25] even when they have advanced to that state experience showes us that these views do not meet with the full support which their seeming reasonableness might lead us at first to expect, for in the case of the Eastern parts of America, for instance, how little corroboration does the comparatively recent history of the Nomadic Tribes which peopled that country before the incursion of the white, derived from memorials which they have left behind them either of a Paleontological or Archeological nature. And yet these Indian Tribes were arrived at the highest state of savage culture and the reckless bravery which they possessed in the highest degree, as a national characteristic, submitted them to greater exposure and to greater varieties of accidental destruction than perhaps any other people. And so it is with other countries, it is extremely difficult to find any trace of the ancient inhabitants further back than the race which immediately preceeded the existing one, unless where the evidence which is obtained intrinsicly proves that the race of which they are the memorials, had arrived at p. 26] a high stage of culture. I would therefore conclude that the risk which man has during his

primeval condition of being entombed under circumstances favourable to his preservation, by his meeting in with conditions such as those which effect the preservation of the lower animals, is very small; and I think it may be shown further that from the circumstances of his nature as man, it is extremely improbable that the remains of these should be found who died in the ordinary course of nature, or by the more ordinary causes of accidental death to man. From all that can be learned from a study of the human mind in the earlier stages of individual life, or from an enquiry concerning the condition of those races of mankind, to which are still in a rudimentary state as regards culture, taking care to avoid drawing conclusions founded on the state of those of tribes which have arrived at a low and almost bestial condition, evidently by a process of degradation, we find as a rule that man is essentially superstitious during the earlier periods p. 27] of savage life. That death is a state from which he recoils with terror, and dread not inferior to that with which it is regarded by civilised men. That he makes it his endeavor as speedily as he can to destroy all that remains of his fellow creatures after death.

He burns or he buries them, and there is never any tendency exhibited to achieve their preservation. It is not until civilisation has attained a high degree of perfection that this natural and instructive dread the dead is overcome, and attempts are made by embalming and otherwise to preserve from the natural process of decomposition the bodies of friends and relatives. Burying the dead is a method of getting rid of their remains which at first eight might seem to be favourable to their fossilization, but it must be remembered that graves are in general dug in humal accumulations, where the processes of putrifaction go on with great rapidity, owning to the presence of decomposing vegetable matter. And besides we have few if any instances where such humans has been preserved to us, as a geological formation of any great age. I have [p. 28] dwelt thus fully upon the chances of mans being preserved to us in the fossil state, not for the purpose of founding any positive conclusion from their consideration, but in order to shew how cautious we should be, in deciding this question in a dogmatic way, upon merely negative evidence, or in so allowing that negative evidence to influence over minds as to render us improperly suspicious against any positive facts which may be adduced.

I shall now proceed to the consideration of the few positive facts, which have been ascertained of a geological nature, respecting the antiquity of man. Much certainty cannot be expected to be arrived at as to the alleged facts of this nature with which, I shall have to deal for in most cases they have been related, as might be expected where the observer was not a trained one, strongly tinged by the bias of the narrator, and besides I shall have to trust in a great measure, to second hand reports of the facts themselves.

Beginning with that discovery of man and his remains which claims the highest antiquity [p. 29] as far as I know, it is that instance related in the Types of mankind, as quoted from Dr Dowler's Tableaux of New Orleans. In the course of an excavation made for the Gasworks in that city, at the depth of 16ft. burnt wood and the skeleton of a man were found, the Cranium lay beneath the roots of a cypress tree belonging to the fourth forrest level below the surface and was in a good state of preservation. The other bones crumbled to pieces on being handled. Dr Dowler has calculated from a consideration of the time which a generation of cypress trees takes to grow and of which they have discovered ten superimposed generations, that the Delta of the Mississippi is at least 158,000 years old, and that calculating in the same manner and leaving out of consideration the generation among which the skeleton was found that it must have the enormous antiquity of 57,000 years. It is however extremely probably that this is an exagerated view of the age of the delta and also of that of the skeleton. The

evidence is of a kind extremely difficult to sift and indeed I have not been able to get Dr Dowler's [p. 30] book itself but have merely trusted to the reports given in the "Types of Mankind". Sir Charles Lyell in his second visit to the U.S. also makes an attempt to compute the age of the Delta of the Mississippi from the amount of mud brought down in a year. He considers it to be about 100,000 old. He also makes some remarks concerning the manner in which the cypress forrests grow and are successively submerged and explains them in quite a different manner from that of Dr Dowler. His explanation of the formation of these submerged forests, would if used as a basis for calculation only make the age of the skeleton that was found about 2000 years. Nevertheless, Dr Dowler when giving his explanation which is too long for me to give here seemed to be in possession of facts of which Lyell appears to have been ignorant when he advanced his. The question still stands in need of critical investigation. Another instance is quoted from a lecture by Agassiz. It was found in a coral conglomerate which composes nearly the whole of the peninsula of Florida. Agassiz whose account of it is given at length, considers it to be authentic, and calculates its age at [p. 31] the very lowest computations to be 10,000 years. There are many other cases where what are said to be undoubted fossil human remains but as there has hitherto been a degree of looseness and inaccuracy in the description of all such discoveries it would be wrong to found much upon them; and as I do not intend to give a mere enumeration of facts related else where I shall rest satisfied with the two examples I have given as shewing that there is not a total want of any positive paleontological evidence of in and existence.

The conclusions which I would draw from this rapid and imperfect sketch of the evidence concerning the antiquity of the Human race, are not of a positive nature, but rather such as tend to prepare the mind for the reception of the facts which will be ascertained when the subject has undergone a critical investigation. However it is evident that we must be prepared to grant for man, a much higher antiquity, than has hitherto been allowed to him, for the monuments of Egypt carry us with certainty far beyond the limits of all Chronologies hitherto adopted and these testify [p. 32] to his being then in such a high state of civilisation as to have required ages for its growth. Moreover, as on the whole the existence of man in very remote times over almost the whole world, has been very fairly indicated and seeing that on account of distinct grounds I consider that the conclusion which has been drawn from this is erroneous, Vizz that man consists of many distinctly originated species, then the time required for their dispersion from one, two or perhaps three different centres must have been very great.

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[i] See Pickering's Races of Man. Bohns Edit: p27 of Introduc:
[ii] Pritchard. Nat Hist of man. II. 509.
[iii] See Pritchard. loc.cit.
[iv] Lyell's Principles of Geology. Edit. 1853. p. 182.
[v] Principles of Geology. p 146.
[vi] Visit to United States. vol. II.p.63
[vii] loc:cit: p 65
[viii] Lyell. Principles of Geology p. [no page no given in original]

Part 3: Hector's contract with the Otago Provincial Government, 1861

In 1861 the Otago Provincial Government wished to employ a geologist, and James Hector was recommended for the position by Sir Roderick Murchison, Director of the British Geological Survey. Hector was interviewed in Edinburgh and subsequently offered the job. After some negotiation, a contract was finally signed on 27 December 1861, a few days before Hector left for Otago.

Two versions of the contract exist. The original, handwritten and signed contact is held at Archives New Zealand in Dunedin as part of item R10775313. In 1870 there were accusations that Hector had not produced a report as agreed in his contract, and the Parliamentary committee on public accounts held an enquiry. The report on the enquiry (AJHR for 1870, section F6, pp 1-19) includes a copy of the agreement, which is transcribed below.

Appendices to the House of Representatives for 1870, section F6, pp 1-19.

Minute of Agreement between James Crawford, junior, and John Auld, both Writers to the Signet, Edinburgh, Agents in Great Britain for the Province of Otago , conform to power of attorney in their favour by His Honor the Superintendent of the said Province, dated 16th March, and registered in the books of Council and Session as a probative writ, 15th November, 1855, in favour of them and William Walter Cargill, of London, Esquire, and any one of them (severally), and him jointly and severally on the one part, and James Hector, M.D., 13, Gate Street, Lincoln Inn Fields, on the other part.

The said parties, considering that the Provincial Council of the Province of Otago, being desirous of being possessed of a Geological Survey of the said Province, direct the said Agents to make inquiries regarding a suitable party for that purpose, and they having applied to Sir Roderick Murchison, he recommended to them to obtain the services of the said James Hector, and accordingly the said Superintendent and Provincial Council, on report by the said Agents, empowered them to enter into treaty and arrangements with him – and seeing that the said James Hector has agreed to undertake to perform the said survey on the conditions after specified:

Therefore, the said parties have contracted and agreed, and hereby contract and agree, as follows, viz:-

1. That the said James Hector shall devote his whole time and capabilities in making and bringing to a completion, and furnishing the said Superintendent and Provincial Council with, an accurate Geological Survey of the said Province, and shall deliver the same, with all necessary plans, sections, and others, to the said Superintendent of the said Province of Otago; said engagement to continue for the period of three years from and after the 1st day of January, in the year 1862; and he shall from time to time, as he may be required, furnish to the said Superintendent reports of his proceedings; it being declared that the said James Hector shall be allowed to conduct his examinations of the Province in any manner he may deem best suited for a scientific geological reconnoisance, subject, however, to the approval of the said Council and Superintendent in the matter of expenses; and the said James Hector shall

also be entitled to publish the results of his investigation for general scientific or geological purposes…….

2. That the said James Hector shall, at his own expense, supply all the instruments, tools, and stationery of every kind, and all implements necessary in making said survey, which shall be of the best and most modern description, and suitable for the purpose.

3. That the said James Hector shall select an efficient assistant before leaving England, and shall engage him for the period of three years, from 1st day of January, in the year 1862, who shall be entirely under Dr. Hector's control, but shall receive the salary after mentioned from the said Council and Superintendent, together with the necessary expenses, not exceeding £10, that may be incurred by him in this country before leaving for Otago, in connection with the preparations for the survey.

4. That the said Superintendent and his successors in office, and the said Provincial Council, shall defray all their expenses of exploration and survey, and of maintenance when employed in the field, along with the equipment of men, horses, and other necessaries.

5. That the said James Hector shall furnish, at the completion of the survey, specimens of all minerals descriptive of the results of the investigation made in virtue hereof, and of the mineralogical formation of the Province.

6. That the said James Hector shall conform to any Ordinance or instructions to be passed by the Superintendent and Provincial Council of the said Province, and any rules or by-laws made in pursuance thereof, regarding the said survey, declaring that nothing in this article shall prejudice his right to conduct his examination of the Province in any manner he may deem best, as stipulated by article first hereof.

7. That the said Superintendent and his foresaids, and the said Provincial Council, shall make payment in Great Britain to the said James Hector, or his duly authorized attorney, of a salary of £800 per annum. Declaring that in respect the said James Hector has been exclusively occupied in relation to the said survey since the 1st day of November last, said salary shall commence to run from that date, and shall continue till the expiration of the aforesaid period of three years mentioned in article first, and it shall be payable in four equal instalments of £200, commencing the first payment of the said salary as on the 1st day of February, 1862, for the quarter preceding, and so on quarterly thereafter; and they shall also make payment in Great Britain to the assistant to be engaged by him as aforesaid, or his duly authorized attorney, of a salary of £300 per annum for the foresaid (period) period of three years, mentioned in article third, payable in four equal instalments of £75, commencing the first payment thereof on the first day of April, 1862, for the quarter preceding; and the said salaries shall continue to be payable to the said parties respectively during the continuance of the engagement, and so long as they shall continue faithfully to discharge the duties incumbent on them by this agreement, but no longer.

8. That the said Superintendent and the said Provincial Council shall also pay the expenses of the passages of the said James Hector and his assistant as follows, viz: As regards the outward passage, £150 for that of the said James Hector, with power to him

to proceed overland via Melbourne, for the purpose of visiting the Australian gold mines; and £70 for that of his assistant; and they shall further pay the direct homeward passages of the said James Hector and his assistant; but in the event of their being engaged, after the expiry of the said period of three years, in a way similar to the present engagement, by any other of the Provincial Governments in New Zealand, they or either of them who shall be so engaged shall not be entitled to be paid their or his home passage by the said Superintendent of Otago. Providing and declaring, that it shall not be in the power of the said James Hector or his said assistant to accept of any engagement from any of the said Provincial Governments during the currency of this agreement, even although such engagements are not to commence till the expiry of this agreement, without giving six weeks' notice in writing to the said Superintendent , and, if required by him, shall be bound to continue their services to said Superintendent in preference to the other Provincial Governments on equal terms, or on such terms as may be agreed on.

9. Both parties bind and oblige themselves to perform their respective parts of the premises to each other under the penalty of £500 sterling, to be paid by the party failing to the party performing, or willing to perform, over and above performance.

In witness thereof.

Part 4: An account of the Matukituki River expedition, 1863

In early 1863 James Hector led an expedition to explore the headwaters of the Matukituki Valley in Otago, with the aim of finding a route to the West Coast. Julius Vogel, then editor of the Otago Daily Times asked Hector if a newspaper correspondent could accompany the expedition. He nominated John Sullivan, who had assisted Hector during his Canadian explorations several years earlier. Hector was pleased to accept Sullivan, whom he trusted as an exploring companion.

Sullivan's account of the expedition was published in four parts in the Otago Daily Times, and then reprinted a few days later in the Otago Witness.

Hocken Collections, Ms-443-3/4/15

O Times Office
Dunedin
23 December 62

Dr Hector
Provincial Geologist

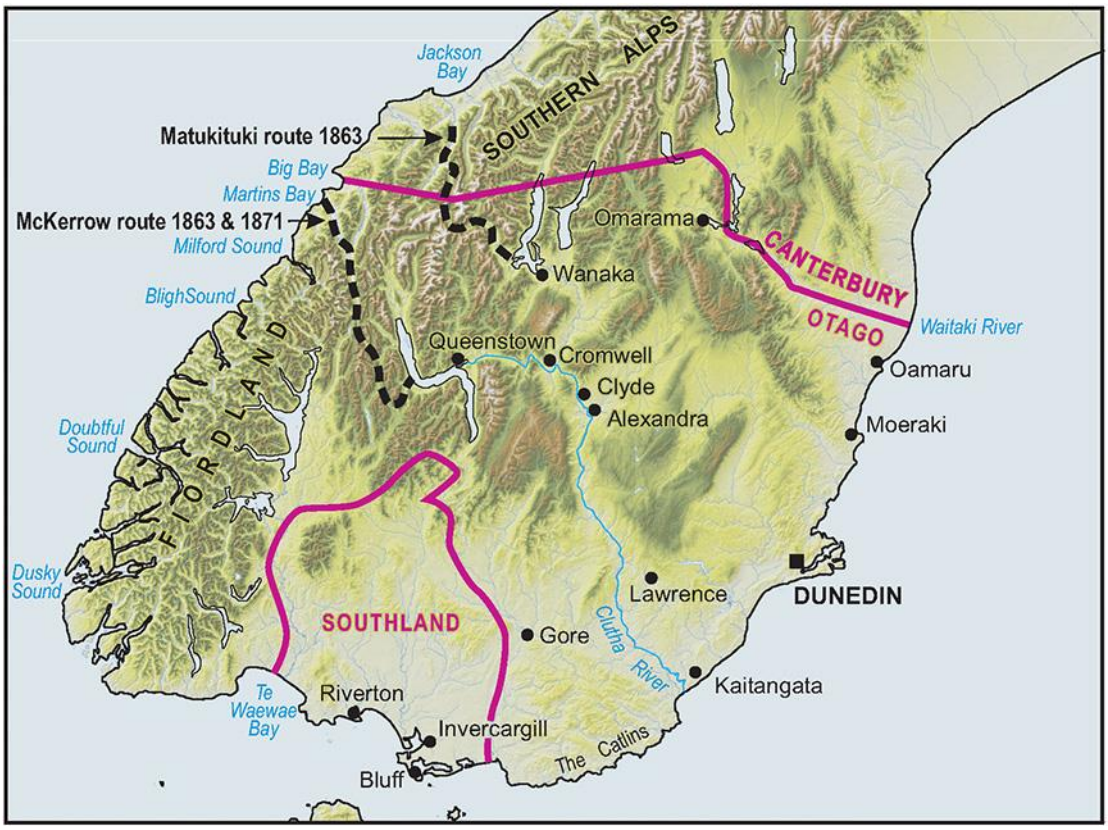
Dear Sir
I have the honour to apply to you for permission to send a special correspondent of this paper with you in the expedition which I understand you are about to make overland to the West Coast for the purpose of exploring the country in the vicinity.

Many of the interesting facts that may come under your notice will not be of a nature that either your time, or the nature of your researches will lead you to report. A correspondent from a paper on the other hand would be able to ---- together a number of interesting facts which would otherwise be lost to the public.

The gentleman I propose to submit to your consideration is Mr Sullivan. He is known to you and you will be able to judge if he will not be an acceptable addition to your party. His instructions would be to aid you as far as he could consistent with his performance of his duties to the paper.

S---- ---t by allowing him to accompany you, you will confer a great boon on the number of persons who are anxiously looking for information concerning the West Coast. I trust you will accede to my request.

I have the Honour
To remain
Dear Sir
Yr obt. Servant
Julius Vogel
Ed Daily Times



Location map of Otago Province in 1863, showing the main localities mentioned in the text. The party travelled by sea from Dunedin to Oamaru, up the Waitaki valley to Omarama, then across the Lindis Pass to Wanaka. The route up the Matukituki valley, crossing into the Arawata valley is shown by a heavy dashed line.

DR. HECTOR'S EXPLORING EXPEDITION INTO THE INTERIOR (FROM THE SPECIAL CORRESPONDENT OF THE DAILY TIMES)

Otago Daily Times, 9 February 1863

Camp, South Shore of Wanaka Lake, 24th January, 1863.
I take the first opportunity I have had since starting from Dunedin to forward you an account of my proceedings up to the present date. You will observe that the distance we have already travelled is upwards of 200 miles, so that a minute description of the country would exceed the bounds of a letter communication. I shall confine myself principally to the road from Oamaru to the Wanaka Lake, and to the few settlements along its traverse.

I arrived at Oamaru on the 6th, and awaited the arrival of the remainder of Dr. Hector's party. My trip by the steamer afforded me no facilities to form decisive opinions on the harbors along the coast, but from what I could glean from persons familiar with them, there is a great desire on the part of the inhabitants at the Waikouaiti, at Moeraki and at

Oamaru, that piers sufficiently stable to resist the heavy ocean surf, should be erected at these places. At Waikouaiti one is to be projected between Jones's and the Government township, but I fear that its exposure to the N.E. will be far from desirable, although the strong prevalent wind from the S.W. can be productive of but little inconvenience. It was midnight when the steamer arrived at Moeraki, so that I was unable to see the "Roads"; the general opinion, however, is that this place is the best adapted for the construction of a pier. My detention at Oamaru enabled me to obtain more precise information on this point respecting it, and considering the vast importance which this town has assumed in a comparatively short space of time, it is really of paramount importance that some improvement of this kind be made to the harbour, in order to render it accessible by the small craft which trade here. If I were to be allowed a choice of the erection of a pier at Oamaru, I should first take advantage of the natural reef which stretches from Wambroo point into the sea in the direction of the prominent point of land which forms the northern boundary of the Bay. Along this reef a Breakwater might be constructed, and in rear of it a pier run out which would be protected from the violence of the surf. At present, when the steamer arrives, she anchors at about one half mile from the shore, and a surf boat puts off for passengers and luggage. It often happens, however, that the surf is so violent as to prevent the boat leaving the land. But even when not obstructed, and when her cargo is landed safely, it is generally accomplished at the sacrifice of articles either being saturated or even destroyed altogether. The freight of landing goods in this manner is enormous, amounting to £1 per ton.

The town of Oamaru is prettily situated, and with its numerous white stone buildings dotting the hills, and fine level road extending along the shore, has all the appearance of a miniature Brighton. Behind the town the country is undulating, with fine pasture, and in many parts the soil is well fitted for agricultural purposes. For about three miles out into the country, except in one locality, the total absence of the "tutu" is remarkable, and flax, so common in the environs of Dunedin, occurs only in very small patches, and these at considerable distances the one from the other. The hills in the neighbourhood of the town are composed of limestone, and a quarry, the property of Mr Hutchinson, is being actively worked. The lime is almost pure, and brings the high price of 8s per bushel. In this limestone marine fossils occur *en masse*, and in parts the stone is so very crystalline as to resemble soft marble. Large masses of gravel overlie the limestone, and if the shingle plains were not of themselves sufficient to the construction and macadamising the road, might be advantageously used for that purpose. The entire absence of wood for building and fuel is one of the greatest drawbacks to Oamaru. The timber which is used here for building and fencing is imported, while that employed as fuel is drayed from Otepopo, a distance of fourteen miles. In some localities the inhabitants have planted Blue Gum, and it appears to thrive well. Considering the enormous expense attendant on draying wood and the high price of coal, it is a matter of surprise why the gum plantations are not more general. The only check to the rearing of this tree, is frost, and if the plant survive three winters it is then sufficiently hardy to resist the cold. Doubtless some sheltered spots might be found, which could be used as nurseries, and which ultimately prove of great value to the inhabitants.

We were delayed at Oamaru until the 8th making preparations for the start, and on the evening of this date encamped at a distance of five miles from the town, close to a bridge which is the recognised boundary of the Oamaru and Waitaki Plains. The whole country bordering the road on either hand is delightful, a large portion of it being under cultivation. In spite of the unusual dryness of the season, the crops appeared in excellent condition – potatoes of the finest quality are raised with the least possible labor, and in short there are no impediments along the whole of the plain to mar the efforts of the husband-man. The road

from Oamaru to the Boundary Bridge and for many miles beyond the latter is a fair rival with the best turnpike roads in England. The traffic along it at this season of the year is very great – tons of wool on bullock drays are continually being met. The stations in the upper country consign their fleecy harvests to a large depot in Oamaru, and the return drays carry flour and other accessories from the stores to the interior. The Waitaki Plain stretches from the Boundary Bridge to the banks of the Waitaki river. This is a distance of about fifteen or sixteen miles by the road. The plain is composed of shingle and bordered to the westward by a terrace of limestone varying in altitude from 100 to 150 feet. In many places it is wretchedly sterile, and as a whole can be only available for pasture lands. Along the base of the limestone terrace, however, there is a little arable land, and the occupants of the out-stations grow vegetables in sufficient quantity for their own consumption. At about twelve miles from Oamaru, there is an out-station belonging to Mr Filleul, situated at the entrance of a gully in the limestone terrace, and I was informed that coal could be got at no great distance up the gully. Accordingly I visited the place, but I found it to be of inferior quality. It is a lignite which, when burnt, leaves a debris similar to wood ash. I have seen similar coal usefully employed in North America. The peculiarity of the North American coal to which I refer is, that it requires continual blasting to obtain a flame, and I presume from the appearance of the coal on the Waitaki plain, that it is in this point analogous. A very excellent building stone in fact, the best I have seen since my arrival in the country, might be obtained at this place in almost unlimited quantity. They have employed it at this place in the construction of a cistern for washing sheep, and as the whole of the sheep-washing apparatus is said to be new to the colony, I shall briefly as possible give a description of it. The cistern is about eight feet deep, and provided with an inlet for clean water and outlet for waste or dirty – both being in action at the same time. Above the cistern is a stage enclosed on all sides except one by which twenty sheep can enter: the stage is in connection with a lever which tilts it up from its horizontal position, and rolls the animals over an inclined plane into the water. After they have swam around the cistern, and received a few plunges under water from the shepherd, a door is opened leading out of the cistern up an incline into what is called the drying paddock, and when the latter is full, the whole of the washed sheep are turned out again on the plain. In four hours I saw 950 sheep washed by this means.

The Waitaki river, in this part of its course, is exceedingly rapid, its current progressing at the rate of at least nine miles per hour; indeed, its rapidity is so great that the jingling noise of the shingle which the current carries with it, is distinctly heard above the roar of the river. The plains in the immediate vicinity of its banks are cut up by numerous long lagoons, which have been formed during the season of high waters, and owing to the accumulation of deposit are often dangerous to cattle and horses. Even is this dry season my horse narrowly escaped being mired in an attempt to reach the brink of the river. At seventeen miles from Oamaru, the Waitaki receives a tributary creek known as the Owomoko, which is the boundary between the runs of Mr Filleul and Messrs Borton and McMaster. It is enclosed between high precipitous slate hills, and has no alluvial flats on either bank. I met two miners who had been prospecting up towards its source; but although they had obtained gold, they said there was such difficulty in getting a "bottom," that they had determined to abandon it in the hope of getting gold somewhere in the main stream.

From the Owomoko Creek the road passes along a level tract of country on the right bank of the Waitaki, and at a distance of about eight miles from the former traversed the Maruenua a second tributary to the main river. At its mouth there is a small cluster of houses situated in a pretty locality surrounded by tastefully laid our gardens and small plantations of the blue gum The valley of the Maruenua for some distance before its waters mingle with

those of the Waitaki is wide open and flat, and appears in every way suited for cultivation. The river itself rises occasionally very high, and where the road crosses it ought to be bridged. Eight miles still further on, and the road traversed the Otakik Creek which joins the Waitaki, where this latter river pursues a most serpentine course. As viewed from a distance the Waitaki has here a very curious appearance. It occupies a flat of from two and a half to three miles broad, and assumes the character of a group of small lakes. This is caused by the river cutting the flat up into small grassy islets, while in is impetuous course, its current sweeps the softer material, of which the plain is composed, before it. From this point on to a small creek on which an out-station of Mr McLean's is built, the plain is a counterpart of portions of the Waitaki plain between the Boundary bridge at Oamaru, and Mr Filleul's last out-station. It might be regarded as proverbial for its sterility. At this station of McLean's, however, the plain assumes a greater elevation and the pasturage again becomes rich and nutritious. The obstacles which the hills offered to the construction of the road in this part have been mitigated by judicious cuttings, and excepting the quantity of boulders distributed in the neighbourhood of the creek, nothing else occurs to render vehicle travelling laborious. The mountain scenery between the Otakik Creek and McLean's out-station is very picturesque, and in striking contrast to the mountains previously passed Donnett's Mountain, towering to the altitude of 6,000 feet, and the most prominent peaks in the range of which it forms part have not yet entirely lost their winter coats of snow; so that we have a pretty good indication as to the frigid hospitality we shall receive from our mountain friends still further to the westward. We encamped at McLean's out-station on the evening of the 14th, and during the night were apprised of a most melancholy accident which happened to Mr McMurdo, and which we have learnt since has unfortunately proved fatal. It appears that this gentleman was assisting in breaking-in a young horse, and while walking behind it and in the act of striking the animal with a stick, he received a tremendous blow from the hind feet on his chest, which caused instantaneous death. One of the men employed by the deceased started immediately to Oamaru for a surgeon, in hope that the case was not so serious, but hearing on the road that our camp was not far distant, he came upon us at about 11p.m., and solicited Dr Hector to accompany him to McMurdo's station. As we have said, however, medical aid was of no avail – death ensued instantly. Two days after the sad calamity, there being no coroner nearer than Oamaru – a distance of 82 miles from McMurdo's station – Dr Hector took it on himself to authorise interment.

The absence of a coroner is only one of the inconveniences, to which sellers in this part of the country have to submit; there are others equally worthy the attention of the authorities, as for instance – there are no magistrates, no justices of the peace, and no constabulary nearer than Oamaru; and when we take into consideration the large traffic at present on this road, and the rapid increase of the same in connection with the gold fields, we cannot fail to see the desirability of appointing such functionaries in this part of the country; further, I believe this is the only one of the main roads to the interior on which no constable is to be seen.

From the creek on which McLean's out-station is built, the valley of the Waitaki gradually narrows until the ridge on the Otago side of the river approaches the mountains on that of the Canterbury; it is the point where the stream cuts its channel through the schist formation. The road from this place on to the Otamitita winds among a succession of small hills which skirt the higher terrace behind them, and becomes a little more difficult to travel, owing chiefly to a succession of boulders. It then leaves the valley of the Waitaki, and passing through the Ahuriri Pass, strikes the river of that name at the mouth of a small creek which is tributary to it. The country in the neighbourhood of the Otamitita is probably the

most picturesque on the road – Ben More rising above all the other mountains in the vicinity, and looking out on the plains of the Waitaki on the one side, and those of the Ahuriri on the other, would alone be a fine landscape; and if to this we add the shepherd's flocks and huts at intervals dotting the scene, the *tout ensemble* would result in a picture sufficiently seductive to lead numbers now pining in the over-populated cities of the old world to change their places of abode, and find a happy home in the yet large unsettled portions of Otago.

After following the valley of the Ahuriri for 14 miles, the road crosses Robinson's Saddle, by far the most severe ascent and descent on the whole distance, and which might be easily remedied by cutting. There is also a creek at Gillies' accommodation house, which the road traversed, depressed a considerable depth below the plains, and which might be rendered more practicable by the same means.

From the Saddle, the descent is into the McKenzie country, an extensive plain stretching into the Canterbury Province as far as the eye can reach, and bounded on either hand by high mountains. At about 6 miles along the plain, from Robinson's Saddle, and at about 3 miles from the margin of the river is Walker's station, pleasantly situated on the borders of a small stream flowing to the main river. From where the road first strikes the Ahuriri, right up to the "Gorge," or the true commencement of the "Lindis Pass," the land can never be any other than pastoral, there being no depth of available soil for agricultural purposes. It is curious to remark, also, that the whole country between the Otamitia and the Gorge is entirely free of the *tutu* plant; and oat-grass, which is not seen between Oamaru and the Otamitita, grows in abundance between that river and the Gorge. The height of the land is reached by leaving the Ahuriri at the point where the Longslip Creek joins it, and following up the creek to its source. The ascent is very gentle, and with a small amount of trouble at the fords in the valley of this creek, the whole road from Oamaru to the height of land, I have no hesitation in saying, will be one of the best in the Province, and if necessary, a tramway might be constructed with but small outlay.

The elevation of the height of land above the plains of the Ahuriri is about 1,000 feet, above that of the valley of the Lindis 1,500 feet, and above that of the plains of the Clutha about 2,000 feet. The mountains which border the right bank of Longslip Creek are the northern extremity of the Dunstan range, while those on the left retain the name in common with the creek. They are composed of slate, with a large admixture of Quartz.

The day following that of our arrival at the height of land being Sunday, we halted, and on Monday, the 19th, commenced our descent to the S.W. in the direction of the course of the Passburn Creek. The descent to the westward is much more rapid than that from the height of the land to the eastward, so that laden drays coming from the westward to the plains on the eastern side of the height of land will find the road considerably more tedious than those going in the opposite direction. The Passburn is crossed twice in about two miles from the Saddle, when the mountains on either hand recede from one another, and leave a small grassy plain extending in a northerly direction to the base of a prominent spur of the Longslip Mountains. In this plain there is an out-station of Mr McLean's, and at a crossing in the creek a cutting in the banks to facilitate the traversed. From this point the Passburn is traversed 12 times in the distance of 5 miles. These fords are only a few yards the one from the other, and where they occur the work on the road has been very considerable, and the cuttings judiciously chosen. I fear that this portion of the Pass will be very bad in winter, but if properly drained it will be as practicable as during the summer months. The whole road to the west of the Saddle has been constructed to admit only one vehicle, so that if a dray going in one direction should chance to meet another coming in the opposite, there is no possibility

of passing; and, even worse, there are portions of the road where there is not sufficient room at admit of turning a dray. It is evident that this ought to be remedied, and no doubt, when the road undergoes improvement this fact will not escape the notice of the Road authorities. Another difficulty, also, has to be contended with during winter in this part, and which, too, might be easily overcome. It is owing to the slope of road towards the creek, and the alterations of the melting and freezing of its miry surface at the risk of cattle and drays sliding off it into the creek. By making the slope towards the mountain base, instead of from it, this is at once remedied.

The Passburn joins the Lindis river at a distance of seven miles from the height of land, and at about a half mile above its junction, it receives a small tributary creek issuing from a gully in which considerable mining operations have been carried on. This gully is said to resemble Gabriel's Gully in its physical appearance, but I presume it has not yielded the same amount of wealth as the latter. It has, however, all the indications of containing gold, and may sooner or later prove a valuable field. Two miles below the junction of the Lindis and Passburn the station belonging to McLean is reached. It is at the commencement of the small plain, through which the Lindis flows before cutting its contracted channel through the mountains to join the waters of the Clutha. The road follows the course of the river, and in the distance of only 10 miles the stream is forded fourteen times. There is not the slightest necessity to make so many fords on this river, the road if carried judiciously can avoid at least one half the present number. The scenery in the Gorge or contracted valley of the Lindis is very fine, and is peculiar as being the lonely real "Pass Scenery" we have met. A large amount of skill has been exercised in making the road here – it is partly hewn and partly built, and presents but one obstacle, viz, that of being only sufficiently wide for one vehicle. The extremity of the Lindis Gorge merges on a delightful plain where the river margin is bordered by scrub, and where the land on either bank is valuable for the purpose of settlement. The road leaves the river at this point, and passes over a succession of hills for about the distance of 5 miles, when it descends into the magnificent plains of the Clutha. This 5 miles of country resembles much the West Taieri, but the road here is scarcely so difficult to travel as at that place. The aspect of such a vast quantity of arable land, with no homesteads, as the fertile plains of the Clutha present, is truly lamentable. I do not wish to appear to complain, but really one is apt to conclude, under the circumstance, that either the Government are lax in their efforts to throw open valuable land for agricultural purposes, or that the enterprise of the would-be settlers of Otago is far below the standard of that in other rising colonies. The pasturage on these plains is excellent, and the depth of good soil is everywhere seen by the prevalence of spear grass – a plant whose fusiform root strikes deep into the best soils.

About 5 miles up the river from where the road meets it, there is a new ferry put on, and boards are raised on poles from the road to the crossing place, indicating that it is the "nearest way to Fox's rush." A large number of miners are on the road for that place from the Dunstan. Ten miles still further, and the road crosses the Clutha at Mr Norman's ferry, close to where the Hawea joins the main stream. The current of the Clutha is rapid, probably averaging five miles per hour, and for a long distance along the river margin I observed the deepest water to be near its right bank. There is a great probability that the Clutha is capable of being navigable by small steamers from the Upper Dunstan Diggings to the Lake district from whence it originates, and if this capability could be actually ascertained there is no telling the amount of convenience which would ultimately result from it.

At the Clutha ferry there are six stores and an accommodation house (the latter the property of Mr Norman) in the process of erection. All articles of food and other necessaries of course bring high prices – flour at 1s per lb, mutton, at Wilkin's, 1s 3d per lb, butter at Roy's, 1s. Just now there is little doing at the ferry except for the stores on the river banks, and those up at the Cardrona Diggings. The Wanaka Lake, our present encampment, is four miles from the ferry, and is close to Roy's station. Our halt here has been necessarily a long one, as this is the last station whence provisions can be obtained. Dr Hector is having a small quantity of "pemican" prepared from mutton for use in the mountains. Pemican is made in the following manner: - The meat is cut into very thin slices, and hung up in the sun to dry - it is then pounded and melted fat poured on upon it. After being well mixed it is packed into a bag make of the hide, when it is then fit for use. There are many advantages in using pemican for travelling: one is that it is unnecessary to cook it, as it may be eaten raw, and, moreover, only a very little is sufficient to satisfy the keenest appetite.

Our camp has the appearance of a small butchery establishment at present, each man assiduously working in his special department; one slicing meat, another drying, a third melting fat, and a fourth keeping "the kettle boiling," with an unlimited supply of wood.

The Wanaka Lake is surrounded on all sides by mountains, excepting on its S.E. part, where a fine plain stretches to the banks of the Cardrona and Clutha rivers. This plain has evidently formed at one time a portion of the Lake, and is characterised by its well defined terrace levels. It, in conjunction with the mountains in the neighbourhood of the lake, govern the direction of the prevalent wind in this locality. During the day, the wind is invariably from the mountains towards the plain, or from north to south, while at night the opposite takes place, that is the wind blows from the plain towards the mountains. The cause of this is very apparent, the sun's rays heat the atmosphere over the plains more rapidly than that surrounding the mountains, - the rarified air following the natural law, ascends, and the colder and denser air from the mountains rushes in to supply its place, thus causing the northerly wind by day. At night, the plain loses its high temperature as rapidly as it received it in the day, while the Lake is very slow in parting with its temperature, - so that at last the temperature of the Lake atmosphere is higher than that of the plain, and the result is a current of air from the plain towards the Lake, or a wind from the South. In fact, the same thing takes place on an island in the ocean; and these phenomena are known as "land and sea breezes."

The difference in the climate of places only a few miles apart, is very remarkable;- for instance, at Mclean's, situated on the Lindis river, 35 miles from this place, flax will not grow; while, in the garden at this place, (Roy's Station) cucumbers, usually reared in hot-houses, are growing in the open air, and no amount of care is bestowed upon them. While speaking of the garden here, I shall add to my letter all the information I got respecting it.

Mr Norman, who owns it, informed me that last year he got 5½ tons of potatoes from one half-acre of ground, and judging from this year's crop I can easily believe that the produce will not fall far short of that realised the last. Peas, French and broad beans, carrots, parsnips, cabbages, vegetable marrow, and cucumbers, are growing here excellently. Last year rock melons and pumpkins grew to great perfection – one pumpkin weighed 98 lbs and measured 6 feet in circumference. I wish it to be observed that no artificial means are employed to rear any of those delicate plants mentioned above; the best idea of the softness of the climate and richness of the soil may be got from Mr Norman's own words, "I stick things in the Ground," says he, "and they come up."

At about six miles from Roy's station there is a magnificent plain with a soil of rich black mould, and occupying an extent of some 4,000 acres. This from its position on the Lake, its valuable soil, and its proximity to fine building timber on the Matukituki river, is a good site for a settlement, in fact I know of none equal to it for many miles around.

I find my communication is becoming rather longer than I had intended, but I trust that I shall have succeeded in giving some information as to the country from Oamaru to this place. At a future time the minuter details of my journey will be communicated to the public.

On Tuesday next, we start for the *terra incognita* in the mountains, which, as viewed from here, appear very formidable barriers. At my next opportunity I shall not fail to communicate all possible information.

I am, Sir,
Yours faithfully,
J.W.SULLIVAN.

The following list of accommodation houses, with their distances the one from the other on the road from Oamaru to this place, may be of use to persons unacquainted with the road:-

	Miles
From Baker's Hotel, Oamaru , to Luter's Hotel, Boundary Bridge	5½
From Luter's Hotel to Fricker's Hotel	15
From Fricker's Hotel to Little's Hotel, Maruenua	10
From Little's Hotel to Christian's Hotel	14
From Christian's Hotel to Giddis's Hotel	11
From Giddis's Hotel to Shean's Hotel, Otamitita	13
From Shean's Hotel to Healy's Hotel	18
From Healy's Hotel to Millar's Hotel	12
From Millar's Hotel to Norman's Hotel, Clutha	55
	153½

You will observe that from Millar's to Norman's, a distance of fifty-five miles, no accommodation house is met. There is, however, no difficulty in in obtaining meals and a bed at McLean's Station, which is twenty miles distant from Millar's.

DR HECTOR'S EXPLORING EXPEDITION (Second Letter)
(From the special correspondent of the Daily Times)

Otago Daily Times, 18 February 1863

Left bank of the Matukituki River.
February 6th, 1863.

Sir – In my last despatch I brought you as far as the Wanaka Lake, and I now avail myself of the opportunity afforded for further communication by the men who are about to return with the boat to Roy's station:

Independent of the time taken up in preparing provisions for the journey, we were materially inconvenienced both at our encampment, and in our further movements by the sudden violent storms to which the lake is subject. It is almost incredible that the clear placid Wanaka of the one half hour can be the boisterous foaming billows of the next. Nevertheless,

such is the case, the lake lies spread out like a sheet of glass, not even a ripple to disturb the serenity of its bosom, and a sudden burst of wind down the mountain valley swells the gentle ripple into waves of yeasty foam, which, lash its pebbly shores with all the indignation of an angry ocean.

During one of these storms the boat which Dr Hector obtained for the use of the party, (although not very stable from the commencement,) was stove in and strained so considerably as to require a thorough re-fit before being used.

On the 31st January, having stowed the heaviest of the baggage, and four live sheep in the boat, three of us embarked and struck off in the direction of the mouth of the Matukituki river, which occurs about 10 miles up the lake, on its western shore. The remainder of the party, with the horses lightly packed, made for the valley of the river, by following along the base of the mountains which skirt the lake margin. I must confess that the voyage by the boat was by no means enviable – a rather different kind of excursion than that usually taken by amateur boating parties with their gaily trimmed craft in the delightful neighbourhoods of Kew and Kensington. – One man was incessantly employed baling while the other two, "stretched to their oars" with the fullest determination to expedite the comfortless task of rowing in places where their legs were at the tender mercy of two kicking sheep per man. The sheep also, appeared by no means to appreciate their amphibious change of existence, and when endeavouring to extricate themselves from their watery beds, they gave us additional trouble. By dint of hard work and a considerable amount of baling, we arrived at the mouth of the river in about 3 hours.

In this part of the Wanaka Lake, the mountains on the eastern shore rise almost perpendicularly from its surface, while those on the western side slope out towards the lake margin sufficiently gently to a admit of a good pack horse track. Drays have been taken along the base of these mountains, but it must have been accomplished with difficulty. At about ? miles above our encampment on the lake side Clutha makes its exit from the southern shore by a wide channel skirting the southern extremity of a fine elevated spur which forms the watershed between the Wanaka and Hawea Lakes. Almost opposite to this point, a wooded island rises about 20 feet above the surface of the lake, and a reef juts out from it towards the western shore. During the time when the lake is high, it is hidden, and it might therefore become dangerous to persons unacquainted with its existence.

About 5 miles from the island, and on the western shore of the Wanaka, the Matukituki encroaches into a wide bay, which has on its northern shore a mountainous island, thickly clad in shrub. The bay is deep for about 2 miles, when the bar of the river is indicated by the surf breaking over a shallow stretching from the island across the main channel of the stream to the wide open flat on its right bank.

From the bar, for a considerable distance up the river is beset everywhere with numerous sand-banks and quicksands, rendering its navigation at this season of the year impossible to any craft except the smallest and only admitting the latter when they are tracked by me wading in the water. As viewed about four miles above its mouth, where the stream winds round the only valuable bush in its neighbourhood, it presents the appearance of a river sending our ramifications over a wide sandy flat, and cutting it up into a multiplicity of gravelly island, whose surfaces here and there support only a sparse growth of coarse vegetation.

While on shore on one of these islands, a sheep had managed to free himself of all rope except that around his fore feet, and preferring *terra firma* to our cranky boat, betook himself to land. We gave chase, and the animal increased our difficulties by taking a swim in a deep arm of the river towards the shore. In the centre of the stream he began to sink, and not liking the prospect of losing such excellent mutton, I took a few strokes and rescued him from so ignoble death for one more sheep-like.

Shortly afterwards we met Dr Hector, who, accompanied by one man, waded the river with a tracking line to our camp for the night on the large flat on its right bank. This flat is upwards of 1½ miles long and 1 broad, and thickly clad in vegetation. The scrub manuka and small shrubs are very thick along the river brink, while the tutu plant, flax and fern are in the greatest abundance. As I shall have occasion further on to describe at length "Thompson's cattle flat," I shall not comment on the former to any greater length at present, as almost all that can be said with respect to the one might be applicable to the other.

The following morning Dr. Hector despatched the boat with a half cargo under the management of two men, while the remainder with pack horses forded the Matukituki, traversed a second open flat, and commenced our ascent of the mountains on the opposite bank to that of our encampment of the night previous. Our reason for traversing the mountains was to avoid a peninsula around which the river sweeps, and which bounds the southern extremity of the impracticable portion of "Thompson's Flat."

Having nothing to guide us but the direction of the channel, which the Matukituki cuts through the mountains, and being frequently impeded also by the obstacles off red ? by the mountains themselves, our track was necessarily circuitous and in parts difficult. But nevertheless after walking and leading our pack horses for about seven miles we succeeded in reaching the highest point on the ridge. Its elevation is about 700 feet above the level of the Wanaka, and from this point a magnificent view is obtained of the lake, the mountains which surround it , and the fine plain which stretches away to the valleys of the Matukituki was rapid and precipitous, and, like our ascent, characterised by a luxuriance of vegetation. The occurrence of such fine pasturage and shrub growth may, perhaps, be attributable in part to the presence of decomposed basalt, which enters into the composition of the soil in these localities. It is remarkable that soils of this nature are always the best for pasturage. The whole of the fine plains along the valley of the Columbia River in North America are of this character, and certainly there are no finer pasture lands in the world than there.

On arriving at the western base of the ridge we had crossed, we encamped on the extensive flat known as "Thompson's Cattle Flat." The whole distance we had come with the horses was upwards of 9 miles, but the distance from our first encampment on the river in an air line did not exceed 4 miles.

"Thompson's Cattle Flat" is about 5 miles long, and from 1 to 1½ broad, or occupying in round numbers,4,500 acres of land. It is rendered in some parts soft and marshy by the small couveés or rivulets which trickle over the ravines in the mountains. These rivulets preserve their channels for only a short distance from the base of the mountains, when they expand into the plain, and their waters become absorbed by the sandy soil, of which it is composed. There are two or three places which are impractical to horses or cattle owing to the depth of accumulated mire, and for this reason also no road could pass from one end of

the flat to the other. If, however, drainage were necessary, it could be accomplished with small outlay, and comparatively little labour.

It, in common with the other flats referred to in this letter are admirably adapted for pasture lands, but I fear that without drainage "Thompson's Flat" would produce rot in sheep. All these flats are however well fitted for the growth of light crops such as oats and barley. Oats if sown in the commencement of November would yield good crops in the following February, but I believe that experience has shown that when sown in May the crop is much more heavy.

If subjected to the plough these lands will after drainage and manuring become of great value.

I would remark that although every facility is here afforded in an agricultural point of view to future settlement, yet the difficulty of access and egress is by no means small, and that in reporting on the capabilities of the country, the latter is a point too often lost sight of by inexperienced travellers.

In order to give an idea of the rapidity of the current of the Matukituki, I would state that the last three days have been occupied in ascending thirteen miles of the river, and that the same distance might be run down with an unladen boat in about one and a half hours. The average rate of the current is about five miles per hour.

In my next communication I shall report fully on the country further up, as well as on the mountains in the neighbourhood.

I am sir, yours, &c,

J.W. SULLIVAN

DR. HECTOR'S EXPEDITION

Otago Daily Times, 19 March 1863

We present below two further despatches from our Special Reporter, who accompanied Dr. Hector's expedition. The first reached us by post, and has been five weeks on the road. The second was brought down by Dr Hector himself, who left the Camp on the Matukituki only three days and a half ago. The account given by our reporter of the trip to the West Coast is intensely interesting. It will be seen that when within eight miles of the Sea Shore the explorers were forced to turn back, owing to their supply of food having fallen short, and to the delay to which they would be subjected from the floods, caused by the heavy rain that was falling. They were within, however, easy access to the Coast, all the difficulties and dangers were overcome. We need say no more, anyone who reads the vivid, but unostentatious, account of the perils of the journey, will do justice to the gallantry of those who accompanied it. The concluding portion of the report we are compelled to hold over, owing to the late hour at which we received it.

Left bank of the Matukituki River
February 9th, 1863.

We start to-morrow at day break for further explorations to the westward, and as it is very probable that you will hear nothing more of our whereabouts for some time, I send you this to explain what in that case might appear unaccountable silence on my part.

At the conclusion of my last dispatch I informed you that by dint of hard work we had succeeded in tracking a boat for 18 miles up the stream, a task which I believe, has never before been attempted. This was necessary as there was no other means of conveying the instruments and appliances necessary for Dr Hector's work sufficiently far into the interior of the mountains to establish a Central Camp, for the prosecution of work during the remainder of the summer.

In effecting this Dr Hector was absent two days, wading with his men the greatest portion of the distance up the stream, while his assistants at the camp were employed in the mountains making geological observations, and obtaining Botanical specimens. My task was to examine the flat for a track, by which to take the pack-horses on to the point reached by the boat, the difficulty being to thread through the swamps, which extend from the base of the mountains to the margin of the river. I succeeded in finding a sufficiently practicable one to within half a mile of the projecting point of the mountains, where "Thompson's Cattle Flat" terminates, and where the first of two lakes commences, from which small creeks issue to the main stream. At this point the marshy lands become too treacherous to admit of a passage, and the only available position is through a few yards in width of shrub growth and fern, on the immediate banks of the river. The dangerous character of these swamps are well indicated by the existence of the Raupos and Maori Heads rising here and there on their surfaces. It is well that these natural indications of treacherous land are so prominent, otherwise rider and horse, in the endeavour to travel what to all appearance is solid ground, would be irrevocably engulfed in an unknown depth of mire.

By following the margin of the river, we were compelled to cross numerous small creeks, which issue from the two lakes from referred to above. These creeks, in common with many others throughout the Province, deposit a large quantity of ochre as their currents become sluggish on approaching the river, showing that their waters are strongly impregnated with iron, derived probably from the rocks which compose the mountains. The effect of this sediment on our trousers, while wading the streams, was to impart a temporary rusty red dye, and which was not wholly removed by continual washing. The marshlands extend from Thompson's Flat to a distance of 5 miles up the valley, and terminate opposite a conspicuous mountain called the Black Peak, and are then succeeded by a magnificent primeval forest, the forest of the Matukituki.

On arriving at the borders of the second lake, our difficulties were greatly increased by the swamps – for the space of four hours we plodded to out waists in the water, leading the pack-horses through dense clouds of sandflies and mosquitoes. Towards evening the mire became more deep, and in less than five minutes all the horses with the exception of two, had sunk so effectually into the mire as to preclude any probability of again rising laden. No alternative remained for us but to ease the animals of their burdens, pack the baggage piecemeal on our backs and seek the driest spot on which to leave it. By the time we had accomplished this and extricated the horses, night, accompanied by a real mountain shower compelled us to encamp. To the artistic painter of natural scenes, the swamps in this part of

the country with men and horses floundering for solid ground, would prove an excellent subject, his picture would form an appropriate frontispiece to Mrs Harriet Beecher Stowe's recent novel illustrative of the lake of the Dismal Swamp.

The following morning, we were successfully keeping on the sand bars of the river to avoid a large tract of very bad country, but ultimately, about two miles before arriving at our present encampment, we were forced to betake a like course to that of the preceding day. This was owing to the direction which the main channel of the river takes in this part of its course. It cuts right into the flat, and pursues a deep and rapid course from the point at which its waters come from the westward, at times carrying away the exterior portion of the sandy formations which rise on its banks, and of those in the centre of the stream. The furthest end of the marshy land is succeeded by two creeks, which roll almost perpendicularly over the sides of the neighbouring mountains, and which as viewed from our camp have a fine appearance in their meanderings through the luxurious vegetation below.

The magnificence and variety of the shrub growth on this plain, is absolutely too great to admit of description. It will suffice to say that it is a natural botanical garden of shrubs, abounding in specimens that would add additional grace to the patrician parks of England. There are three or four distinct species of the Eurybia, alone, and the Carmichalia here surpasses in beauty any of the same species I have seen elsewhere. There is one curious fact observable in the Eurybia,here, viz., they are all small leafed, and in this differ from those common to the environs of Dunedin. Those common to the latter place are not found here, and *vice versa*. In the damp and shady nooks of the gullies and ravines, new forms of the Cryptogamia are abundant; and, in fact, the whole neighbourhood promises to be so rich in botanical productions that the Botanical collection of Dr Hector's journey alone will prove of great importance to the lover of science, as well as afford useful information to the inhabitants of the colony. It will be a pleasing piece of intelligence for the horticultural amateurs and gardeners of Otago to know that a number of new species of the Shrubby Epicredia as well as of the Eurybia have been discovered, and that we may yet entertain hopes of obtaining the seed. The advantages offered by this place to Mr Buchanan, the botanical collector, as well as its situation with respect to wood and water, show that Dr Hector could not have chosen better for the site of a Central Camp. The dense sombre green forest of Birch (Beach) extends from this point 12 or 13 miles up the valley, with a southern exposure. The trees are of large dimensions, one close to my tent measures 12ft in circumference at the distance of 1ft from the ground, and is from 90 to 100 ft in height. This is by no means grand among pigmies, the greater number nearly equal it in dimensions while there are others superior to it in every respect. It is curious to observe almost the entire absence of the Pine, but judging from the few young ones scattered here and there among the Birch, there can be no doubt that at no great distance we shall find them plentifully distributed.

The contrast between the forest of the Matukituki with its feathery occupants, and the marshy flats with their myriads of insect life is strikingly pleasing. After wading through the latter exposed to the merciless persecutions of the sandflies and mosquitoes, our camp in the lofty forest birch cheered by numerous birds, to us is a Paradise.

While writing about the birds in this part of the country, I should wish to make a statement frequently made with respect to the marked poverty of the woods in birds. It is a great mistake,- an altogether erroneous idea. Ducks are plentiful in the creeks, the marshes, and along the river banks. Wood-hens are extraordinarily numerous; and groups of trees

might be seen in the forest literally thick with Ka-kas. A fairly expert sportsman, even supposing he did not carry havoc among the thousands of large eels in the streams, would, from among the birds alone, obtain a plentiful supply of food. The smaller birds, as the inquisitive little robin, so friendly as to prefer a perch on your knee or head; the tiny tailless, and other small birds, with whose names I am not familiar, are scarcer than those above; and once since establishing the camp, we have been visited by the crow. In order to give you some idea of the manner in which the Ka-kas appear at certain times, I have only to tell you that on Sunday last about 50 of them paid us a visit, and a sufficient number to feast the whole party was obtained without the least effort.

At no great distance from here, a fine glacier, sending its mountain torrents by precipitous leaps to join the main river below, has a grand appearance. Beneath the bright rays of an early morning sun it has all the semblance of a mass of silver, with liquid streams pouring over the rich brown carpeting of the mountain side. As, however, a considerable portion of time will be spent among the glaciers of the trip we start upon to-morrow, I shall reserve for a future dispatch a description of this glacier, and those further up the valley.

Left Bank of the Waikouaiti River,
March 8th, 1863.

Having just returned from our trip to the West Coast of the island, I hasten to prepare an account of the journey for transmission to you by the first opportunity that offers.

It will be recollected that in my last dispatch I gave an account of our arrival at this place, where Dr Hector's Central Camp is fixed, and that I intimated his intention of further explorations of the country to the westward. Accordingly, leaving half the party, which consisted of six, Dr Hector taking with him one man (I.Rayer) and myself started on the 11th February for a preliminary exploration in that direction. Each of us led a pack-horse, carrying provision, sufficient, with proper economy, for a month consisting principally of the Pemican, which had been prepared at Ray's station, a few pounds of bacon, flour, tea, sugar, &c. We took no tent but as a substitute a large oil-skin sheet, with which to erect a shelter on the plan of the back-woodsmen in America, under which we could sleep and sit, and at the same time enjoy the full advantage of a rousing fire in front of us.

Proceeding up the valley of the Matukituki, we found it to preserve the same character for several miles, as that described in my last letter, viz: a broad shingle channel, out of all proportion to the magnitude of the stream, and only very partially occupied by it. On either side of the river, between it and the mountains which almost rise precipitously, there is a variable extent of swampy land, which in a state of nature is nearly impassable, but yet supports a luxuriant growth of tough tangled rooted grasses, so that eventually they may become excellent feeding grounds for cattle. As the river was flooded owing to the rains which had poured incessantly for the few days previous, it was with difficulty we forded the various channels, and we had frequently to leave the stream altogether, and bear away through the dense scrub, which consists of prickly thorn, with an undergrowth of large size bayonette grass. Our progress was slow, so that by the evening of the first day we had only accomplished 7 miles. A dense fog continued to obscure the higher mountains from our sight, but strange to say instead of this adding to the gloom, as might be expected, it gave rise to a feeling of relief as these profound and rugged valleys assumed the appearance of open country, bounded on all sides by low and richly-wooded hills. Early next morning I obtained

my first view of the icy pinnacles of Mount Aspiring, its apparent altitude being greatly increased by the rolling mist which still enshrouded its base. Mount Aspiring is one of a group of lofty mountains, all of which it evidently overtops by a pyramidal mass of rock almost too steep to allow of eternal snow resting on its surface, and which forms the characteristic feature by which it might be recognised almost at any distance.

About 10 miles above our main camp, the Matukituki is formed by the confluence of two equal sized branches. The one from the north, although the shortest may be properly considered the main stream. The other, which sweeps from the west, joins it through a rocky defile, which at first sight we anticipated would offer an obstacle to our progress. We were, however, disagreeably surprised to find it occupied by an open flat, fringed by noble forests of beech, which clothe the mountain sides also to the height about 2,000 feet.

From our Central Camp, right up to this point, but only on the left bank of the main river these forests preserve a uniform density, and commence close to the margin, leaving in some parts no extent of alluvial flat. This difference in the vegetation observable in the two banks is due to the exposure. The mountains on the left bank facing the westward being favoured by the prevalent moist winds from the west coast of the island, support a magnificent forest, while those on its right entirely sheltered from those benign influences, present nothing but bare and rugged rocks.

A short distance above the junction of the two branches, we required to ford the stream, but, although we had to contend with only half the volume of water we had previously, we experienced much greater difficulty, as it was now compressed into one broad, deep and swift current. It was only after several attempts, in one of which we all narrowly escaped being swept down the stream, that we ultimately succeeded in reaching the left bank.

The scenery for two miles above this ford is extremely beautiful. The mountains on either hand are to be seen furrowed by impetuous torrents issuing from the snow at their summits, and gaining the level of the river by a succession of wild leaps. One of the most strikingly picturesque of these cascades descends by six precipitous bounds from an altitude of about 1,200 feet, forming graceful curves of white spray that are momentarily swayed onto fantastic shapes by every gust of wind. The dark green shades of the massive beech forests along the base of the mountains also, are relieved at intervals by the pale verdant of patches of Mallow trees, which at this season were covered with their snowy white blossom.

On the 13th February, we re-crossed the river, and making a considerable ascent on its right bank, gained the elevated terrace which borders the gorge immediately below McKerrow's Flat. The tangled nature of the scrubby vegetation in this portion of the valley, and the frequent succession of deep gullies, rendered our progress so slow and tedious, that Dr Hector struck off to the river and succeeded in finding a more practicable track by which to avoid the labor of hewing, as well as a means of again descending into the immediate valley on the stream. In the gorge, the channel is beset with huge boulders, rendering the river for some distance a series of foaming rapids, as well as preventing any track being practicable along the edge of its waters. Just above the gorge, through a narrow fissure in the mountains, there is a fine view of the glaciers which clothe the southern flanks of Mount Aspiring, affording a good idea of the enormous quantity of ice which mantles on those Alpine slopes. We are here able as it were to form an adequate conception of those profound ice valleys of the interior of the Mount Aspiring group, without the labor of exploring the valleys themselves, and incurring the frequent risks by which glacial traveling is attended.

Owing to the river being kept flooded by continuous rain, we were obliged to avoid its channel, and pursue our course through the wooded points on its banks, thereby occupying above three days in accomplishing 20 miles of its course. At the end of this time, the obstacles to taking horses further increased so apparently, as the woods closely hemmed the river, that Dr Hector determined to leave them at this point, where they could range over excellent pasture as low down as McKerrow's flat, without being able to rejoin their companions at the main camp, owing to the gorge which is there interposed.

The Matukituki in this part of is course flows due south, and we were now within a few miles of the boundary line of the Province of Canterbury, which crosses it at right angles, and opposite to a depression in the mountains to the westward, which from a distance had seemed favorable to our further progress to the west, and from which there issued a large tributary to the river. As it was Dr Hector's wish to keep as close to the boundary line as possible, and within the Province of Otago, he devoted the 15th in searching for a "pass" in this direction. By a laborious climb, he ascended the mountains to a height of about 5,000 feet, but could observe no available route, as the extent of the nick, or depression, was deceptive, and confined to the exterior range bordering the valley; while to the westward a succession of lofty mountains rose from an extensive *mer de glace.* To the north, however, he perceived that, by following the Matukituki to its source, a comparatively low saddle would lead into a region of country in which the mountains appeared to have a lesser elevation. He resolved, therefore, to make the first attempt in this direction.

Accordingly, the following day he made a *câche* of the bulk of our provisions and other articles not needful for the further journey, and arranged 3 packs of about 50 lbs each, to carry us. Unfortunately, our oil-skin sheet was too heavy, so that our only protection during the nights consisted of 2 blankets and an opossum rug.

On the 16th we continued our journey along the edge of the river, climbing over the huge boulders which are dispersed along its margin. Considering the weights of our packs and the dangerous nature of our mode of travel, the task was by no means enviable. If for one instant we had stumbled or lost our balance, the result must have been either a broken limb or being swept down by the violence of the stream. But with all the labor and hardship of mountain travel, it is not altogether devoid of pleasures. Even here, for instance, in spite of 50lb packs and risks of broken limbs, one must indeed be dead to the poetry of nature who could not admire the sublimity of the scenes which surrounded him. A "wild rolling river" such as the Matukituki at this place to ring angrily over its rocky bed and receiving tribute of silvery rivulets from among the green foliage of the neighbouring mountains is by no means a common place natural scene. It is one that can be enjoyed in the mountains only, before the river has tamed itself down for the uses of civilised communities before it mingles with the ocean.

About two miles above, where we left the horses, the mountains on either side of the stream present cut cliffs quite perpendicular to its waters, so that we were compelled to climb a spur and pass through the woods to avoid the obstacles which they thus offered to our progress. This operation was by no means easier than following the river brink, owing to the soft mossy footing which the ascent afforded. Passing through the thick woods which are intersected by deep cuttings choked with fern, scrub, and masses of decayed vegetation, we again, descended to the boulders in the bed of the river, and following it a short distance merged on a small plain, about a mile and a half long, and occupying almost the whole breadth of the valley. We encamped here, at the foot of a strip of mountain, which some time

previous had been cleared of forest by the violence of a recent avalanche. A mass of trees torn up by the roots, and surrounded by an enormous quantity of rock lay piled around us, an indication of the tremendous power which produced such ruin. Finding that our rate of travel, on account of the difficulties of the route, became too slow for us to advance far with our slender supply of provisions, we made a reduction of our packs, and with 25 lbs each resumed our march. The remainder, which was two-thirds of our supplies, was tied in a parcel and slung to the forks of a tree.

From our second *câche*, the ascent towards the source of the Matukituki is very rapid, and at the distance of about three miles from it, the first glacier is met. It is very insignificant, indeed, scarcely deserving the name, and forming a steep incline, which commences at a considerable distance below where the woods terminate on the mountain sides, and descends to within a few yards of the river. From the ice cave, at its lowest extremity, a small stream flows to the main channel, which both above and below their junction, is contracted and rocky, causing the river to assume the character of a series of foaming cascades. Four miles still further up the valley, we attained the "limit of the woods;" and although early in the afternoon, we encamped at this place, as we should get no fuel until we had crossed the saddle and descended to the "limit of the woods" on the other side. The altitude at which this limit on the eastern side of the saddle is observable, is about 3,500 feet above the sea. From this point to the base of the height of land, the river valley is extremely rugged, being occupied by old glaciers presenting the general chaos, common to all moraines, viz, a confused mass of angular and smoothly worn boulders distributed without any regard of size, or order of deposit.

On reaching the base of the saddle or "height of land," which we accomplished in about an hour from our encampment on the 17th, we observed that this branch of the Matukituki originates chiefly by two minor branches, one of which issues from a glacier occupying a portion of the saddle, and the other from a second glacier on the adjacent mountain. Numerous small streams also from the neighboring mountains, traversing the moraine, add their waters to the main river, but their volume is only small when compared with the other tributaries lower down the valley.

We were now at the most north-westerly portion of the Province of Otago, and close to the boundary line which separates it from that of Canterbury, having followed the largest tributary of the Molyneux to its source.

By a steep climb, we gained the summit of the Saddle, following the course of the larger of the minor arms of the Matukituki, travelling a portion of the distance on the uppermost glacier which feeds the river. The height of the Saddle above the sea is about 5,900 feet. From this point a most magnificent view was spread out before us. The high mountains to our right, with their clear blue pinnacles of ice pointing to the sky, and shrouded in enormous glaciers, presented a truly Alpine scene, while the whole valley at our feet was completely filled by a glacier occupying an area of about 5 square miles. This latter, as well as the mountain from which it descends, and the river to which it gives birth, Dr Hector named in honor of Mr Haast, the Provincial Geologist of Canterbury, that gentleman being the first scientific traveller to describe the glaciers of New Zealand. After making an examination as to the best way to descend, a task both perilous and laborious, owing to the glacialised surface of the rock composing the mountain, and the high angle of indentation of its side, we commenced our descent. For some distance we succeeded easily, but occasionally we were completely stopped by a peculiar blue rock interbedded with the slate,

and which may be appropriately likened, from its undulated surface, to corrugated iron. About half way from the bottom, I could assimilate our position to nothing better than flies on a wall; and in order to render our movements more sure, we took off our packs, and rolled them over the side of the mountain to a heap of boulders lying at its base. Although we had started from the saddle at about 1.00pm., it was growing dark by the time we had gained the upper part of the small glacier to our left, and it was at least 800 feet above the true base of the mountain, or 900 feet above the surface of Haast's glacier. The continual fall of avalanches and loose stones in the valley occupied by the small glacier, rendered traveling very dangerous, and as might was fast approaching Dr Hector thought it advisable to reascend a portion of the mountain, and avail ourselves of a hole in the rock for a night's lodgings, as well as a shelter from the falling ice. The accommodation afforded by the mountain in the shape of beds was extremely hard, but as travellers are often forced to do, we made the best of a luckless position. Gathering a few dry stalks of some alpine plants, just sufficient to boil a kettle and half roast a caw caw, we drank some tea, shared our bird, and very like the "Root Digger Indians," snuggled together in our mountain hole till the first rays of morning again revealed the icy pinnacles that towered above us, and the deep field of ice spread out at our feet.

The night was extremely comfortless, with a high wind that howled among the mountain fastness, and chilled us in our rocky cave. At intervals a crashing noise like the outburst of distant thunder, told us of avalanches quitting their icy thrones to pay their tribute to the Ocean King, while, at the same time, it suggested to us the real value of a place of safety, despite its stoic hospitality.

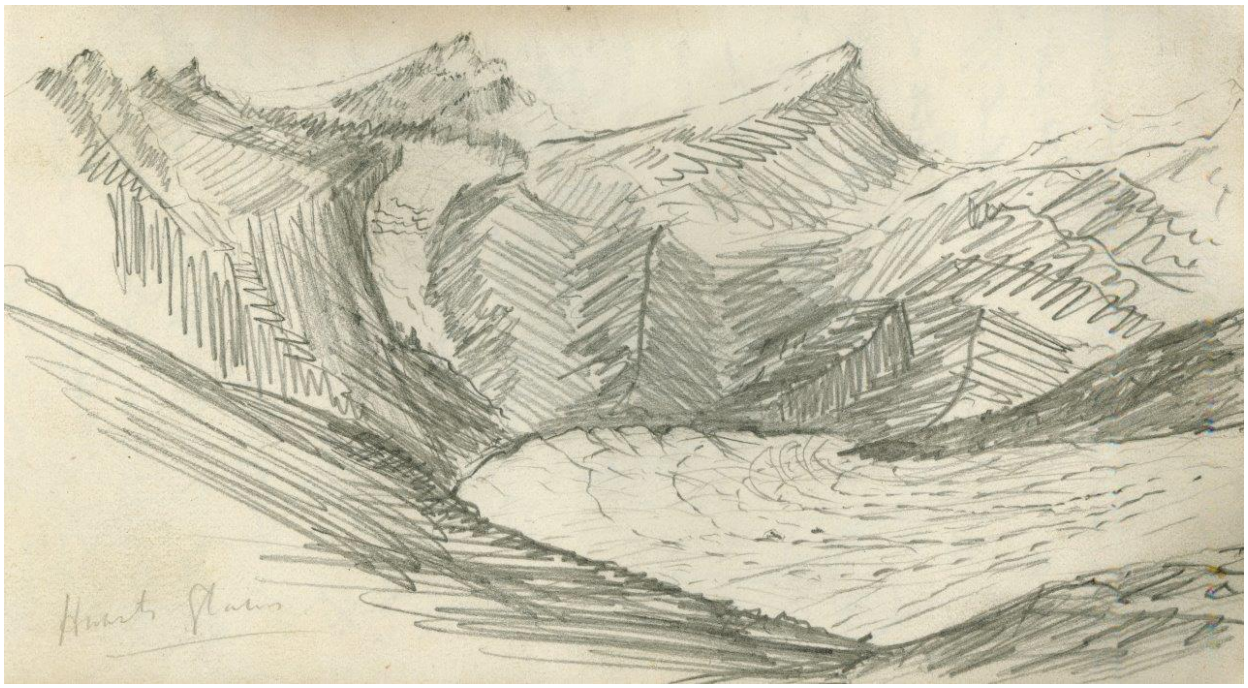
Early next morning we descended to the small glacier alluded to above, and prepared to traverse it. The valley which it occupies does not exceed 1½ miles long and about a quarter of a mile broad, but owing to the steepness of the glacier, and the deep "crevasses" or rents that occur in the ice, a large amount of Alpine experience and skill are requisite before attempting to cross it. It assumes also the shape of a wedge, and in consequence of its sides nowhere touching the rocks that border it on either hand, but surrounded by wide chasms instead, its impracticability is therefore rendered still more apparent. Previous to starting from Dunedin, Dr Hector, by his foresight, had provided a small sized cord of about three-sixteenths of an inch in diameter, and 80 feet in length, similar to what is used as tracking lines in canoe voyages on the rivers of Canada, and from its great utility to parties fording rapid rivers in this country, experience has taught us that it cannot be too strongly recommended. For instance, when crossing the strong and rapid current of a river our method was to tie the cord to our waists, at a distance of twelve or fourteen feet the one from the other, then while the leader was battling with the force of the stream in the deepest and strongest part of its course, he was supported by the others until he had reached a portion of the river the force of which he was able to contend with, and at the same time afford assistance to the next in order to cross, and so on until all had gained the opposite bank. In descending the small glacier in like manner, we were thus attached the one to the other, to prevent any serious accident happening in case of slipping the foot or falling into one of those frightful "crevasses," the sight of which often alone sufficient to unnerve the stoutest heart. We encountered two very dangerous fissures in the descent. Both were too wide to leap, and we cleared them in the following manner. Dr Hector sought out the most practicable part, where the ice on one side approached more nearly the ice on the other, and with an axe cut steps to where it was possible to leap; then he continued cutting steps in a slanting direction until he had gained the top of the ice on the opposite side of the "crevasse". This being done, we attached the packs to the middle of the cord, and he pulled them across. Then with our

waists carefully attached, and following the steps he had cut, we passed over singly in the manner he himself had done. We occupied 2½ hours in getting to the commencement of Haast's Glacier. Having had scarcely any supper the night previous, and no breakfast before starting, we collected some drift wood that had been pushed along by the glacier, and made a meal before proceeding to traverse the large glacier.

We lost little by this delay, for by the time we had refreshed ourselves, we had the most favourable part of the day for the work of threading our way across the great field of ice which lay before us. Dr Hector having carefully examined the surface with his glass, and fixed upon the best route for avoiding the "crevasses," took the lead, three of us being lashed together as before by the rope. At first we had to ascend the glacier for some distance to head a wide and profound "crevasse,' compelling us to pass among blocks of ice and stone, the debris of avalanches which fall every ten or fifteen minutes from the higher part of the glacier. Luckily for us, by hurrying on we passed this danger during an interval, but had scarcely got beyond its reach when one of the most tremendous avalanches that we had witnessed came rolling down, sending blocks of solid ice of many tons in weight to within a few yards of where we stood, while the place we had so recently passed was overwhelmed with smaller fragments and masses of rock. The cause of these continual avalanches is the slow motion by which the elevated ice fields of Mount Aspiring advance to the edge of the precipice that overhangs the valley occupied by the glacier. Pillar like masses, which slowly swelling in the sun's rays assume fantastic forms that glisten against the sky-line for a few days or hours, until they topple with a crash on to the surface at the lower ice field, when the fragments become re-cemented, and by the pressure of their own superincumbent weight slowly advance down the gentler slope of the valley in the form of a glacier. The height from which this "ice cascade" descends is about 1,500 feet, and the mass of ice thus formed into a glacier is probably not less than 500 feet in thickness at its upper end, and at its lower about 100 feet. Its length, as I previously stated, is 5 miles, and in that distance the slope of its surface amounts to 1,100 feet. It may easily be conceived what a gigantic power this immense weight exercises on the rocks by which it is enclosed, although its downward motion be exceedingly slow, wearing and scooping out the valley, and pushing and carrying loads of broken rock to form what are called *mozanies* along its sides and its lower extremity. The chasms or crevasses which caused us such difficulty in crossing its surface, are due to this same downward motion of the ice. They are of two kinds; the first transverse to its length, are found when the ice passes over a sharp declivity on the rocky bottom. At first they are straight, but soon from the greater rapidity with which the central part of the glacier progresses, being freed from the friction against the rocky walls they form a series of curves that resemble the ripples on a smooth flowing stream. The second are in the length of the glacier, and are caused when the body of ice passes from a narrower to a wider part of the valley, when it splits up as it were by its own weight in the endeavour to expand.

The day was very fine and warm, rendering the ice moist, tough, and easy to travel over, so that our enjoyment of the journey across was very great. There are many novelties to interest the traveller in traversing a glacier for the first time. The enormous blocks of rock which rests on its surface perched on slender pinnacles of ice, the "moulons," or mills, where the surface water escapes into the body of the glacier by a circular hole, whirling stones round within it with great velocity, the trains of stones and heaps of dirt that stretch in regular lines form projecting angles of rock from which they fall on to the surface of the ice, and slowly and steadily carries forward, all these (provided the weather be favourable) yield sources of abundant interest. Even to enjoy the deep azure blue of the "crevasses" repays one for the necessary risk of stretching one's neck over these awful chasms.

We occupied the same time in crossing Haast's glacier as that in descending the smaller one already alluded to, viz., 2½ hours, and at its completion we encamped a few yards below where the river of that name commence its hurried course. It originates by two minor arms, the second being only thirty or forty yards from the first, and if anything a little longer than it.



Sketch of the Haast Glacier that Hector made in his notebook.
Hocken Collections, University of Otago: S11-502g

The following day, the 19th, after making a *cache* of about 1½lbs of flour, and 3 boxes of sardines, we began our descent of the Haast, and by nightfall of this date had got at a distance of about 8 miles from its source, our travelling being somewhat analogous to that in our ascent of the branch of the Matukituki, sometimes climbing over huge boulders, at others plodding through dense woods. In this short distance the river is joined by numerous tributaries, the largest by far occurring on its right bank, close to our encampment of this date, so that its volume rapidly increases. The very steep incline of its channel also renders the current almost impassable, so that in following the stream one is not always able to ford it at will, so as to escape the difficulties which the woods and ricks occasionally offer.

At the distances of 4 and 9 miles from its source, the river passes through gorges with an enormous velocity, and so rapid is the descent of its valley, that viewing tall trees at a comparative short distance off, their tops are seen on a level with the eye. Dr. Hector ascertained its fall to be in this part of its course to be 7 in 30. Continuing our course for about 6 miles further, we were arrested in our progress by a precipitous cut cliff which for about 100 feet above the surface of the river is quite devoid of vegetation, and presents a perpendicular smooth surface. Considering that we had been travelling the whole distance down the stream in a northerly direction, and thereby penetrating into the Province of

Canterbury, Dr. Hector felt that he was thus on ground beyond the limit of his especial duties. Having, however, taken so much trouble in contending with the difficulties of this district, he would obtain as much information as possible relative to the mountainous regain to the westward, before proceeding any further by the valley of the Haast. To accomplish this we turned back for about one and a half miles, crossed the river, made a small cache of pemmican and flour sufficient for one meal, and ascended a mountain he has named Pigeon Mountain, near the summit of which we encamped on the night of the 21st. The following morning we proceeded along the summit of the ridge to the highest point of the mountain, when to our great delight the ocean shore lay stretched before us at the distance of about 15 miles. From this point the whole course of the river by which we had descended was accurately traced, and it was found to sweep through a perfect canon at a distance of two miles above the point at which it debouches into a river, the valley of which ranges from 3 to 5 miles in width, and whose volume of water is at least equal to the Molvneuz where it leaves the Wanaka Lake. From careful bearings, which Dr. Hector had taken throughout the route we had followed, we learnt that what we saw was Jackson's Bay, he therefore named the river which flows into it the Jackson.

The view which we obtained of the mountains on all sides of us, was extensive and grand. To our right Mount Aspiring, enveloped in ice, and to our left, Mount Richards, with the enormous glacier which forms the source of the Jackson, are the most conspicuous mountains in their respective groups. The latter Dr. Hector has named in honor of the distinguished Survey Captain, whose labors on the West Coast will be still fresh in the memory of most familiar with the Coast Survey.

The valley of Jackson's river is cut up into extensive shingle flats, which, as a rule, instead of supporting a stunted vegetation, like those to the coast, are covered by fine open forests of splendid timber. A considerable quantity of good land which it contains also might at some future period become valuable. As viewed from Pigeon Mountain a wide flat occupies the lower portion of the valley, and with its dense woods fringes the Ocean Beach, while the river sweeps around a conspicuous rounded hill, which seems to rise from its centre to an elevation of probably 1,000 feet.

The sight of the ocean was too great a temptation for us to be satisfied that we had proceeded far enough, and, although our provisions were almost entirely consumed, only about 1lb of flour being left, in the hope that we might get eels and obtain a sufficient number of birds in the Jackson Valley to admit of our descent to its mouth, we determined to push on. Dr Hector's gun had supplied us with numbers of ducks, (caw-caws) on the east of the height of land, but in our descent of the Haast River, the scarcity of birds is very remarkable. Even the woodhens, so common at each of our encampments to the east of the Saddle, were represented on this side by only one or two of the species. However, this might be a mere piece of unusual ill-luck we agreed, and trusting to the protection of good fortune, resumed our packs for the descent of the Jackson's Valley.

Keeping along the ridge which forms the northern boundary of a thickly timbered valley that leads into that of the Jackson, we travelled for about one and a half miles before commencing the descent.

From the ridge, the slope down to the former is grassy and undulating, with no timber, but dotted thickly with small lakes surrounded by peat. The whole surface of this grassy slope is cut up by numerous rents or fissures, indicating, probably, that this region had been

formerly visited by earthquakes. Along the top of the ridge, our attention was attracted by a curiously worn track, about 2 feet wide, which at first I imagined might be an old Maori track to some part of the valley of the river. Dr. Hector however, after carefully examining it, pronounced it the track of some birds, pointing out certain indications which left no doubt as to his conclusion. The animal that was in the habit of resorting to this elevated promenade, had scooped out here and there rounded holes, possibly as resting places, in the manner in which the grizzly bear does in the haunts he frequents. These tracks never seem to be seen penetrating into the woods, but keep in the direction of their edge at no great distance from them. They had been evidently in disuse for a long time, and as no like tracks freshly made were observed, it is reasonable to conclude that the animals that made them are either extinct, or, to say the least, exceedingly rare.

It was about noon before we descended into the woods; the thick masses of decayed vegetation, overgrown by mosses and undergrowth served to fill up the spaces between the rugged angular masses of rock which, on this portion of the Pigeon Mountain, seemed to be detached from the mountain side. Great care was taken in passing over this first part of the journey, as sometimes treacherous holes lay concealed beneath a spongy layer of moss and rotten wood. The tomatasowra, that painful impediment to the traveller, does not exist in the woods of the west, and the bayonette grass, equally cruel, is of exceedingly rare occurrence. This is undoubtedly owing to the woods having never been devastated by fires. The latter fact is remarkable, and affords a strong presumption that for a great number of years perhaps, never have these localities been traversed by man. A succession of deep descents, occupied by splendid timber, (the *totara* being the forest king), led us to the edge of the most thickly-clad flat which occurs at the forks of the Jackson and Haast Rivers. Just as darkness had set in we struck the margin of the latter, and, for the first time since starting, retired to rest supperless.

The magnificence of the primeval forests of the West Coast must be seen to be thoroughly appreciated. Not only do the *totara* and beech attain to gigantic proportions, but the fuschia and tutu become very large trees, averaging two feet in thickness.

Our camp on the bank of the Haast was uncomfortable in the extreme; the rain poured down on us in torrents, saturating us in a short time, while the myriads of mosquitoes made a sortie from the bush, and kept us in a perfect state of fever the whole night. With the dawn of the following morning, the 23rd, in a tropical like flood of rain, and with no breakfast, we were fortunate enough to strike probably the only ford for some distance at about a mile above the forks, and proceeded by the flats about four miles down the valley of the Jackson. Here the letter river sweeps along rapidly round the base of a densely timbered mountain, and failing in an attempt to cross the stream to a large open flat in its channel, we took to the woods. The rain was incessant, and even worse than at early morning, so we retraced our steps to where we had entered the woods, and with the greatest difficulty kindled a fire. We then cut poles, and arranging them as the North American Indians do in their conical wigwams, threw our blankets round them, and this formed good shelter under which to dry our clothes. Not a moment's cessation of the rain occurred throughout the whole day, and in spite of our vigilance over the hooks we had baited for eels, none came to our share, so with a little tea and a consoling pipe we endeavoured to sleep off appetite, until the next morning might supply the wherewith to make a breakfast. As early as possible we looked to our lines, but they unfortunately yielded nothing. Dr. Hector, however, started with his gun, and returned with one pigeon. This we stewed in a small quantity of flour and water, and with a little tea made our first meal since leaving the summit of Pigeon Mountain. The rain had

evidently set in for a lengthened period, and, although this was the first long continuation of wet weather we had experienced since leaving Dunedin, it was a circumstance greatly to be regretted, seeing that we were now only about eight miles from the sea, and the rapidly increasing flood of the river was the greatest obstacle to our reaching its mouth. Taking into consideration also the density of the woods, and the distance we should have to travel before obtaining further supplies, Dr Hector thought it advisable to abandon the project of descending the valley further. The accomplishment of the journey to the very brink of the ocean, under present circumstances, would have been at a great risk; while, on the other hand, with sufficient provisions and moderate weather, the work would have been easiest which had fallen to our share since leaving the Central Camp on the Matukituki.

DR HECTOR'S EXPEDITION TO THE WEST COAST

Otago Daily Times, 20 March 1863

The following is the concluding portion of the account by our Special Reporter, the first part of which we published yesterday:

At noon of the 24th, therefore, not however without reluctance, we started to return, forded the Haast, and following up a tributary creek, which joins it just below the *canyon*, through which the main river rushes, we made an ascent of 1,500 feet before leaving the former. We then threaded our way through the woods until dark night, having gained the altitude of 3 feet in the heaviest rain I have ever witnessed. The kindling of a fire was beyond the bounds of possibility, and nothing remained for us but to seek the best place for the night. There was however little choice, so wearied with our exertions in climbing, drenched and hungry, we huddled together in our wet blankets, our only comfort being to take off our wet clothes and wring them before doing so, and passed a night, the misery of which can only be conceived by those who experienced it's like. The morning of the next day broke as the night had continued, with the same steady rain, and each of us shivering as in a fit of ague, wrung our blankets, rolled them up, and resumed our march. In two or three hours, just as we had gained the saddle, about 1,000 feet above where we had slept, the sun shot his warm rays over mountain and valley, which in return sent forth volumes of mist from the dense woods that clothe them. The cheering contrast produced by the sun has a wonderful effect on the spirits of even famished men, and they might well exclaim in ecstacy with the poet Milton, "We feel thy Sov'reign vital lamp." Taking advantage of the few dry sticks we could collect, we kindled a fire, roasted a Ka-ka and made some tea. It will be seen that since the morning of the 23rd up to the present date, the 26th, an interval of exactly three days, the only food which we had consumed between the three of us, consisted of one pigeon and a Ka-ka. I merely state these facts as they appear in my notes made at the time, and I must confess, that in re-writing them here, especially when I recall the hard climbing in such a continual saturated state, I am at a loss to account from the successful manner in which we regained the summit of the mountain.

Our scanty meal over, we descended into the valley of the Haast to the same camp where we had left the small *cache* of pemmican and flour. The half we instantly cooked, and then formed a shelter of branches beneath which we had a good night's rest. Early next morning the rain recommenced, and continued the whole of that and the following day, preventing our crossing the stream, owing to its being so greatly flooded. We were now in by means an enviable position; all our provisions being exhausted, and no decrease in the

volume of the river. On the morning of the 1st of March, therefore, we resolved to make a desperate effort. Lashing ourselves together, as usual in such cases, Rayer walked first, with a heavy log on his shoulder, and with a gallantry deserving of every praise, after being twice swept off his legs, struggled safely to the other bank with the rope. Amidst the torrents of rain we forced our way to our camp at the foot of Haast's Glacier, where it will be remembered we had made a câche, consisting of three small boxes of sardines, and about 1½lbs of flour. The first thought on our arrival was the provisions, but on examination we found the rats had eaten our flour, and even the sardine boxes lay scattered some 12 or 14 feet the one from the other, as if they had been marked for consumption.

Happily, however, instinct does not suggest a method to open soldered tin boxes! So that we had the pleasure of at once emptying the contents of two of them.

By the time we had got to this encampment the rain had abated, and the partially clear sky lent us feeble hopes that the weather would clear; but on the following morning the heavy black clouds came rolling up the valley from the sea, bursting over us in rain, if possible more severe than that in the valley of the Jackson. The dense fog that hung over the glacier above forbade all chance of re-crossing – and the rain on the surface of the ice rendered the task still more impracticable. We were accordingly detained another day, with one small box of sardines between the three. Towards evening we began to feel hunger keenly, and the rats having left the small piece of sheep-skin, about 6 square inches, in which the flour had been rolled, we cut it into small strips, and with some roots of "toi-toi" grass, made a kettle of soup. This we drank and divided the sheep skin. We all felt the danger of our position more or less acutely; just at the time when strength was most needful, it was rapidly failing, and when fine weather was most useful, a deluge of rain arrested our progress. Besides, either owing to extreme weakness, or huddling over the smoke of the fires to dry our clothes, both Rayer and myself became partially blind. The feeling was very like that of snow-blindness, viz., as though the eyes were filmed over and filled by angular particles of sand, that caused a painful pricking sensation. Providentially, for really could but regard it as such, the following day turned out fine, we, therefore, lost no time in making the best of our way across the glacier.

It was here especially that Dr Hector's characteristic daring and skilful leadership were displayed to their fullest extent. His high reputation as a traveller, and distinguished position in the scientific world, are too well established to need any eulogium which I might attempt to proffer. But at the same time one cannot help rendering him his due of praise, when by his unerring judgment the intricacies of primeval forests, the dangers of rapid rivers and the perils of mountain, and glacial travelling are all equally overcome.

As previously we were lashed together while he took the lead with the axe. Step by step was cut for a long distance, owing to the smooth and rounded nature of the ice, and at one place in particular, where a narrow ridge divided two awful crevasses, Dr Hector balanced himself on one foot to cut a step for the other in a marvellous manner. To us, following in the rear, when we could avail ourselves of the steps, the travelling would have been comparatively easy task had our blindness not been increased by the sun-shine on the ice, but to our leader the dangers were frequent and awful. In spite of the bad state of the ice on which the continuous rain for ten days had made a great alteration since we passed formerly, we accomplished the whole journey across in a less time than that before occupied. The smaller glacier was also passed with fewer difficulties, as Dr Hector preferred taking to the ascent of the mountain lower down than the head of the ice. The climb to the saddle was necessarily severe, but for my own choice I preferred it to the descent. By about 4 or 5 p.m.

we reached "the limit of the woods," and encamped for the night. The next day we rapidly gained the camp, where we had slung our provisions to the fork of a tree, and luckily found them undisturbed. We devoted a great portion of the day to feasting, probably a not very advisable, though agreeable, thing to do after so long a fast; but we were all so ravenous that discretion on this point was entirely out of the question, so we fried and boiled until dark night, which, with its usual hospitality of late, furnished us with a drenched bed.

The following day, March 5th, we returned to the camp where we had left the horses, and found our first câche safe. When starting from this place on the 16th, we had anticipated an absence of only 6 days, and took provisions for that period, after the first two days march it will be remembered two thirds of that quantity were slung in the forks of a tree to lighten our packs. Now as we were just 17 days instead of 6 going and coming, a very fair idea can be formed of the small rations that fell to our share. It is simply this, that for 14 days (the time elapsed from the first câche to our return to the same place) we lived upon 2 days' rations, and the few birds that were shot. Altogether the birds shot numbered 5 Ka-kas, 4 pigeons, 3 ducks and 2 wood hens in this interval.

Our protracted absence was due to the weather, and the delays incident to exploring thick-wood country entirely unknown, and where we were often necessarily at fault, for, after all, were the line of route which Dr Hector ultimately chosen out as we returned, after an acquaintance with the country marked out and cleared, it would be no great feat for an active man in four long summer days to go from the Wanaka Lake to the mouth of the Jackson River.

On the 6th, Dr. Hector started in search of the horses, and with the utmost difficulty caught one. They had got perfectly wild, and had wandered as far down the valley as the gorge near McKerrow's flat. About noon of the next day we got the remainder of the horses, packed up, and descended the Matukituki to near the forks where we encamped, and on the following day, the 8th, we arrived at the central camp on the right bank of the main river.

With reference to the geological structure of the country, I am by no means able to furnish an accurate scientific account; for the latter, Dr. Hector's report of our journey, there can be no doubt, will furnish the minutest details. I have, however, his authority for stating, that the rocks are identically the same throughout the whole distance we travelled, as those in the upper part of the Matukituki valley, and southward to the Wakatip Lake, being the upper members of the auriferous series. He searched for gold but necessarily in an imperfect manner and without success; but large quantities of coarse black iron sand mingled with greensand were observed, so that there is little doubt that gold will occur there also. For certain reasons connected with the structure of the country, he believes that its distribution in the river valleys will be extremely irregular and prospecting will be the work of chance. On elevated gullies in the high mountains towards the coast, however, more regular auriferous deposits may be expected, but even on this point he is by no means confident.

I may here point out that no such trip as ours can ever settle these matters, provided all the mountains present such serious obstacles as those over which we crossed; as from the nature of the difficulties a man can only sufficient provisious to go and to return with the strictest economy of time, and without allowing for the contingency of bad weather, the chances of which are pretty certain, and which, after all, was the primary cause of all the hardship we endured. On the other hand, a leisurely examination from the West Coast as a starting point, would be comparatively easy, and cannot be too soon undertaken, for the

interest of the Province. It will be seen as one of the results of this trip we have the discovery of an extensive valley, with level, though densely wooded, plains, stretching from the margin of the ocean for a long distance inland. Is it not extremely probable that there may be other spots on this coast, which has hitherto been considered so perfectly iron bound, equally well adapted for future settlement?

The farthest to which miners have prospected, in the direction we were, is up the Matukituki nearly to its source. Only one party had penetrated as far as the camp where we left our horses previous to our passing. Five or six other parties have followed our tracks. As they all seem to return quickly, they do not appear to be successful. They all state that they have obtained gold and black sand everywhere, but not in payable quantity. The nearest point to this at which mining is regularly prosecuted is somewhere on the Matatapo, and I am about to visit the exact locality.

March 15. Dr Hector is about to start to town on business, and I take this opportunity of forwarding the present letter to you. It was written to avail myself of the first chance of communication, and I had hoped ere now to prepare an account that would have been fuller, and have done more justice to the details of our expedition, - some of which, I have no doubt, would prove of interest; but I am sorry to say that for the last few days, in common with Dr Hector and Rayer, I have been suffering from the after effects of the continual wading in the icy cold water of the rivers, and the constant wearing of wet clothes, which, combined with the hunger and fatigue experienced on the journey, had greatly reduced us, and which could not fail to produce a re-action on the stoutest constitutions. I have, however, full notes, and can, if desirable, prepare a more sequential narrative.

With reference to the notes upon which this and my previous communications are founded, it is but justice to Dr Hector to state that their value, in a great measure, depends upon the sources of information which he placed at my disposal, and that frequently they are the embodiment of instructive conversations round our camp fires.

Part 5: Hector's appointment to the New Zealand Government, 1864-65

When Hector visited Auckland in June 1864 in connection with the Dunedin Exhibition, he was able to have discussions with the government about setting up a Geological Survey. He was asked to give his views in writing on what was needed, and his proposals were quickly accepted. Several copies of the correspondence are held in the Te Papa archives and in the GNS Library. The letters given below are a composite set from the Te Papa files (MU000197 and 198 during 1864 and MU000147 during 1865)

James Hector to Attorney General (Frederick Whitaker), 17-6-1864
Te Papa: MU000197/001/0067

Auckland
17 June 1864

Sir,

Referring to our conversation this forenoon, I have the honor to submit the following estimate of the establishment and probable annual expenditure that would be required for making a Geological Survey of New Zealand. It is framed on the understanding that the Staff would have permanent employment and that the results would be published from time to time without any definite period being fixed for the accomplishment of the Survey. Otherwise the expense would be much greater as the salaries necessary to secure the temporary employment of efficient men would be higher and also a larger Staff would be required neither does the estimate I now submit provide for the expense of the publication of results in the form of maps, sections, illustrations, printing of Reports and Catalogues &c.

The Department would be divided into Field, Office, Laboratory and Museum.
The Staff would comprise
Director
His duty will be to Survey and check survey. To classify, correlate, publish and be responsible for all the work of the Department.
Office
Clerk to keep and arrange all records.
Draughtsman to reduce field observations in the form of maps, sections &c.
Office keeper who will also work in the Museum in mounting specimens and in the Laboratory when required.
Museum – Curator and Palaeontologist to arrange classify and prepare specimens of minerals & fossils for descriptive publication.
Laboratory – Assistant for preparing Chemical Analysis of Minerals, soils &c.

The expense of the Department may be considered under the heads of Initial, to cover the travelling expenses of assistant, the purchase of Instruments, Implements, Books &c. Fitting up of Laboratory, Museum & Office Say £3000

Annual Salaries

Director	£800
Field Assistant	400
Clerk	300
Draughtsman	300
Curator of Museum	400
Keeper	200

Expenses
The Field expenses which would vary - £1200
Laboratory and Office expenses say £150
Museum expenses, for carriage purchase, mounting and classifying of specimens say £300

In round numbers, the expense for the first year would be £8000 and the yearly expenditure thereafter under £5000.

I have &c.
James Hector.

Whitaker to Hector, 22-6-1864
Te Papa: MU000198/001/0034

Attorney General's Office
Auckland
22 June 1864

Sir,

In reference to your letter of the 17th June addressed to me on the subject of a Geological Survey of the Colony of New Zealand, I have the honor to ask you to be so good as to inform me whether it would meet your views to undertake the Office of Director; and if so when your present engagement with the Provincial Government of Otago will terminate, and you will be prepared to commence your duties on behalf of the Colony.

I have &c.
Frederick Whitaker.

Dr Hector
The Club
Auckland.

Hector to Whitaker, 22-6-1864
Te Papa: MU000198/001/0034

Auckland
22nd June 1864

Sir,

In answer to your letter of this date asking whether it would meet my views to undertake the office of Director of a Geological Survey of New Zealand, organised in the tenor of my letter of the 17th inst. I have the honor to inform you that I will accept the proposed office; and in further answer to your letter beg to state that my present engagement to the Provincial Government of Otago terminates on the 3rd of Decr. next, but that my service will probably be required in that province until the 31st of March 1865, after which date I shall be able to undertake the duties of the above office.

I remain &c.
James Hector.

To the Honble
The Attorney General
Auckland.

Hector to Whitaker, [no date]
Te Papa: MU000198/001/0034

Memo: for the Honble the Attorney General

In order to prepare for the establishment of a Geological Survey Department, it will be necessary to procure the following articles from England.

1. Books – Comprising works of reference and general works on Natural History, the cost of which would be about £200.

2. Laboratory Apparatus necessary for effecting chemical analysis, also a few Surveying Instruments say £250.

3. Type specimens of minerals, Rocks, Shells both recent and fossil, and other objects necessary for reference and for the purpose of forming the nucleus of a Museum, - cost say £400.

Detailed lists of the above could be furnished upon my return to Otago, but I would recommend, as more economical, that authority be given me to order these direct through my private agents and scientific friends.

James Hector.

Whitaker to Hector, 23-6-1864
Te Papa: MU000198/001/0034

Auckland
23 June 1864

Sir,

I have the honor to acknowledge the receipt of your letter of the 22nd June 1864, stating that you are willing to accept the office of Director of a Geological Survey of New Zealand, and that your engagement with the Province of Otago will terminate on the 31st of December, but that you expect your services will be required in that Province until the 31st of March 1865.

I have now the honor to inform you that the Government of New Zealand will appoint you to the office referred to as soon as your present engagement terminates and you are ready to undertake the duties.

I have &c.
Frederick Whitaker.

To Dr Hector.

A change of government, further complicated by the move of the seat of government from Auckland to Wellington, led to some uncertainty about whether Hector would still be employed. In March 1865 the Colonial Secretary wrote reassuring him that the incoming government still wanted to set up a Geological Survey.

Gisborne to Hector, 17-3-1865
Te Papa: MU000147/001/0011

Colonial Secretary's Office
Wellington
17th March 1865

Sir,

I have the honor by direction of Mr Weld to inform you, with reference to your correspondence with the late Government, that the present Government propose to engage your services as Director of a Geological Survey of New Zealand on the terms offered by their predecessors, namely a salary of Eight hundred pounds per annum, and to recommend to the General Assembly to ratify the whole arrangement.

Pending the meeting of the General Assembly the Government do not feel justified in incurring any expense that can possibly be avoided beyond your salary.

It is desirable that you should as soon as possible come to Wellington, to place yourself in personal communication with the Government.

I have the honor to be
Sir
your obedient servant
W Gisborne
Under Secretary.

Hector to Colonial Secretary, 23-3-1865
Te Papa: MU000147/001/0012

Wellington
23 March 1865

Sir,

I have the honor to acknowledge receipt of a duplicate of a letter forwarded to me at Dunedin informing me that the Govt. propose to employ my services as Director of the Geol. Survey of N.Z. on the terms of the arrangement made with the late Govt., but that pending the meeting of the Assembly they do not feel themselves justified in incurring any expense that can be possibly avoided beyond my salary. In reply and after my conversation with you on the subject I have the honor to state that I shall be very happy to meet the views of the Govt. with respect to delaying the permanent organisation of the Dept. until the sanction of the Assembly has been obtained & to commence my duties on a temporary arrangement to last say for three months (3) from the 1st April prox.

During this period I can be most advantageously employed with a small extra expenditure, in completing the work still required to obtain the full value for the Geol. Survey from the collections which I have deposited with the Provl. Govt. of Otago, such as figuring, describing & classifying the specimens & selecting duplicates for the Colonial Museum.

The expense & names of the Staff I would like to retain for this work are as follows for three months.

Clerk RB Gore	£75
Draughtsman J Buchanan	75
Asst. Laby. Wm. Skey	75
Asst. for Museum Work A. Donald	30
	£255

The above are all members of my present Staff that I would like to retain on the Permanent Survey & provided an arrangement can be made with the Provl. Govt. to obtain the use of my present office & part of the present exhibition building for a short time if I require it after the close of the Exhibition, I will undertake to relieve the Govt. from all further expenditure during the above period of 3 months except such as may be incurred for the packing & carriage of specimens to the Col. Museum at Wellington & the allowance of travelling expenses to my Assistants when they are required to proceed to Wellington.

With regard to the Col Museum I would strongly recommend that its establishment be proceeded with at once. A wing or distinct portion of the estimate building might be at first erected until the Govt. felt in a position to incur a larger expenditure.

In the selecting of the site I can only suggest that it should be accessible but yet removed from the dust of a thoroughfare & apart from other buildings in order to diminish the risk from fire. Of the various sites which have been pointed out to me that on the portion of the town belt which forms part of the Wesleyan Reserve at the top of Hill Street, appears to me to be the most suitable.

The first expenditure on building need not be great as a rectangular Hall 80 x 50 ft: well lighted & strongly floored would be amply sufficient for a commencement. The cases and Museum fittings should however be from the first made according to the plan that will be ultimately adopted in the Permanent building to which they can be afterwards transferred & the first building be then devoted to Offices or other subordinate purpose connected with the Dept.

Plans & drawings of the various styles of Cases I would recommend can be forwarded to the Govt. on my return to Dunedin, accompanied if desired by a plan for the temporary building.

The cost of building & fittings should not exceed £1000. The collections at present available for deposit in the Col: Museum so far as I am informed are.

1. Collections of N.Z. Society.
2. Honble. Mr Mantell's Collection.
3. Col: of the Provl. Govt of Wellington including those made by Mr Crawford in his Geol: Survey of the Province.
4. Sundry private collections of my own.
5. Duplicates of the collection of the Otago Geo. Survey & Gold Field Dept.

In addition to the above are specimens of the raw products of the various Provinces, which have been collected at considerable expense for the exhibition, & the Local Committees, having no further use for them after the close of the Exbn. will in many cases be

glad to hand them over to the Colonial Museum so as to avoid the further expense for packing & carriage.

Some of these specimens are specially valuable for a Col: Museum, as exact descriptions of them will appear in the Reports of the Exbn. Coms. so that they should be preserved for reference.

Should the Govt. not feel inclined to incur at present the expenditure for the temporary Colonial Museum, the only other plan I can suggest is to endeavour to make an arrangement with the Otago Provl. Govt. for the use of the galleries of the Exhibition Building at Dunedin for the purpose and store up for the present the collection already in Wellington.

The following is a note of the required expenditure according to the foregoing proposals.

I. Temporary Establishment for 3 months from 1st April
Salaries – Director £200
Assistants as above 255
Packing conveyance &c say 145
600
II. Museum, being part of the permanent outlay
Building & Fittings in Wellington £1000
Securing specimens at close of N.Z. Exhibition, say 200
£1200
Site for Museum (?)

I have &c.
James Hector.

Gisborne to Hector, 24-3-1865
Te Papa: MU000147/001/0013

Colonial Secretary's Office,
Wellington
24th March 1865

Sir,

I have the honor to acknowledge the receipt of your letter of the number and date quoted in the margin [23rd March 1865]; and, in reply, am directed by Mr Weld, to inform you that your proposals in reference to a Geological Survey of New Zealand and the establishment of a Colonial Museum have met with the approval of the Cabinet.

I have the honor to be
Sir
Your most obedient servant
W Gisborne
Under Secretary.

Dr. Hector
Wellington.

Col Secretary's Office to Hector, 24-4-1864
Te Papa: MU000147/001/0536

Colonial Secretary's Office
Wellington
24th April 1865

Sir,

I have the honor, by the direction of Mr Weld, to return to you the Plans forwarded by you, and to inform you that the Government will at once call for Tenders for the erection of a Museum, on receipt from you of the proper Plans and specifications.

You will be good enough to cause them to be prepared as you suggest, by Mr Mason, and they should refer not only to the portion now to be erected, but also to the front portion which the Government hopes soon to be in a position to erect.

It seems to Government that such office accommodation as may be absolutely necessary now, may be more economically provided by the addition of a lean-to at the back of the Museum. You will remind Mr Mason that the wall between the Museum and future Offices in front, will at present be an external Wall.

Cases will be ordered when there is room to deposit them when finished, but the plan forwarded by you to the Honble. Mr Mantell is not accompanied by a specification. It is therefore returned for that addition

[*Copy terminates*]

Gisborne to Hector, 3-6-1865
Te Papa: MU000147/001/0536

Colonial Secretary's Office
Wellington
3 June 1865

Sir,

I have the honor by direction of Mr Weld to transmit herewith copy of a letter to Messrs Mason and Clayton Dunedin, instructing them to proceed at once with the erection of the central portion of the proposed Colonial Museum at Wellington.

I have the honor to be
Sir,
your very obedient Servant
W Gisborne
Under Secretary

Dr Hector
Geological Survey Office
Dunedin.

Gisborne to Mason & Clayton, 3-6-1865
Te Papa: MU000147/001/0536

Colonial Secretary's Office
Wellington
3 June 1865

Gentlemen,

I have the honor by the direction of Mr Weld to acknowledge the receipt of your letter of the 25th ultimo enclosing Plans of a Colonial Museum proposed to be built at Wellington, and a Tender (recommended by you) from Mr John Beck for the erection of the Building.

In reply I am to convey the necessary authority for at once proceeding with the central portion which is estimated at Six hundred and Twenty five Pounds, of the proposed Building.

I have &c
W Gisborne
Under Secretary.

Gisborne to Hector, 14-8-1865
Te Papa: MU000147/001/0536

Colonial Secretary's Office
Wellington
14th August 1865

Sir,

I am directed by Mr Richmond to acknowledge the receipt of your memorandum of the 11th instant respecting the Colonial Museum in course of erection.

In reply I am to thank you for your communication and to inform you to the following effect with reference to your suggestions.

1. Mr Richmond approves of the Walls and Roof being boarded instead of plastered as in the specification.
2. The question of completing the front part of the building must remain over for a short time.
3. The two cottages contiguous to the Museum will be placed at your disposal.
4. The Overseer of Government Domains will be instructed to have the approach to the Museum improved.
5. The packing and removal of the things at present in the Government Buildings to be commenced.
6. The Attorney General will be requested to prepare a form of receipt for articles deposited in the Museum.

I am to request you to be good enough to undertake the supervision of this work on behalf of the Government.

I have the honor to be,
Sir,
Your most obedient Servant
W Gisborne
Under Secretary.

Part 6: Correspondence about the Geological & Meteorological Department, 1882-1901

Most of the information we have about the day-to-day activities of Hector's organisation comes from correspondence between 1882 and 1901 held in the Te Papa archives. During the long depression through the 1880s and early 1890s, all government departments were asked to cut their expenditure. In a series of memos, Hector outlined the work his staff was doing, and argued why expenditure on the Geological & Meteorological Department should not be reduced.

Hector to Colonial Secretary, 6-1882
Te Papa: MU 00013/002/2/877

There is no covering letter with this memo, but it is apparently information required in compiling estimates for the following year's budget. Hector took the opportunity to emphasise the importance of the work his staff was undertaking.

Item 1, Assistant Geologist – S.H.Cox

Has been 8 years in the service, came out under appointment from home at his present salary. Spends about 8 months of the year in the field:

1. Prosecuting the Geological Survey of the country which is making progress from year to year.
2. Making special reports on any mineral discoveries where required for public information.
3. Inspecting and regulating the working of the coal mines throughout the colony with a view to securing the safety of the Mines under the regulations of the Mines Act 1874 – This work is combined with his regular duties whereby a Geol. Survey is effected. The remaining four months is occupied in preparing maps and reports and in the investigation of the minerals which is his particular branch of the Museum work.

Item 2, Analyst – W. Skey
19 years in the service. Performs about 350 analyses in the year in connection with the Geological Survey, for public bodies, Colonial Industries, under Adulterations Act, Poisons Act, Fiscal Acts and Law and Justice – also regulates the Standard Weights and Measures for the whole Colony as required by the Act. During the past year 2 months of his time has been spent in collecting and analysing the waters of the hot springs at Rotorua. The results of all analyses are published in an annual pamphlet which is in the hands of members.

Item 3, Clerk and Curator, also Meteorological Observer and Statist – R.B.Gore
Geological Survey – Keeping the records and conducting the correspondence of the Survey – keeping the accounts and work in connection with the publication of the Reports of the Department.

In charge of the Department and Museum during the absence of the Director during which time is responsible for the business generally. Also performs clerical work connected with various references from Other Departments re Col. Industries etc. etc.
N.Zealand Institute – Is Secretary to the Board (without salary) and has to keep the books, accounts etc.
Botanic Garden Board – ditto

Meteorological – Is Observer for Wellington and Statist for Dept. – corrects and prepares for publication the Meteorological Statistics for the Colony and other returns uniformly with those commenced in 1857.

Item 4, Draftsman, etc. – John Buchanan
19 years service. Makes all drawings of maps, etc. for the publications of the department and as Botanist has charge of the Col. Herbarium. During past year has done good service in the field in accordance with the resolution of the House for the collection and distribution of Alpine plants.

Item 5, Field Assistant and Collector – A. McKay
8 years service. Is chiefly employed in extending the Geological Survey and collecting rocks, minerals and fossils which are required for the preparation of the Geological maps. He spends about 8 months of the year in the field and the remainder of the time is spent in classifying, arranging and cataloguing specimens.

Item 6, Museum Assistant – T.W. Kirk
8 years service. Keeps all entry books for receipt and exchange of specimens, mounts and arranges specimens, classifies and describes natural history objects – As Librarian he has to post up catalogue of books and take charge of the libraries of the N.Z.Institute, Public Libraries.

Item 7, Librarian – T.W.Kirk
This is not a new vote but simply transferred from another part of the Estimates in consequence of a resolution of the House that the Patent Office Library which number 1,500 volumes be transferred to the Col. Museum.

Item 8, Field Expenses and Special Journeys
The expenditure of this vote necessarily varies from year to year according to the nature of the country in which field parties are engaged. This year it is proposed to undertake some special journeys in remote parts and slightly extra expenses will be required.

Item 9, Messenger and Keeper – J.A. Bigg
This is a responsible office as he lives in and takes charge of the Museum and has a great deal of shipping work to do.

Item 10, Contingencies
Covers cleaning, lighting, heating offices, Museum and Laboratory and repairs of Museum.

Item 11, Weather Reporter, etc. – Capt Edwin
An officer transferred from Marine Dept, and now charged again against the vote for the Meteorological Branch.

Item 12, Meteorological Stations and Time Ball Observatory
This vote was formerly £600. All but the three principal stations have been discontinued which cost £120 – the remainder of the vote being for instruments, periodical inspection of Stations, compilation of statistics and maintenance of Time Ball Observatory by which accurate time is distributed daily throughout the Colony.

In addition to the above the Director has been placed by Government on various Public Boards and Commissions and in charge of carrying out resolutions of the legislature relating to Fish Culture, Fisheries, Local Industries and many other matters that require much labour and add to his own work and that of his subordinates.

Hector to Colonial Secretary, 18-12-1884
Te Papa: MU00013/003/0001/0374

Additional details are given in a memorandum to the Colonial Secretary explaining why the staff of the Colonial Museum could not easily comply with new regulations as regards working hours and the signing of the attendance books at set hours.

Sir

With reference to Cabinet Circular No. 21, I venture with the utmost respect to submit the following difficulties in the way of its strict and literal application to the offices of the Geological and Museum Department.

1. The Chief Clerk, Mr. Gore, has to be at the Observatory on the hill at the back of the cemetery at 9.30 a.m. and often later so that he cannot sign the book at 9.30 a.m. as required. He has also to complete his work as statistical clerk in the evenings as he is too much disturbed during office hours.

2. Mr. Skey, the Analyst, has to complete any analytical processes on which he is engaged in the laboratory until long after midnight I must say he is generally at work by 9.00 a.m.

3. Mr. Buchanen, the Draftsman and Botanist, has duties at the Botanical Gardens as well as the office and generally works with two short intervals from just before 9 a.m. often until 10 p.m. All three officers have faithfully served the Government since 1882 in the above manner.

4. Mr. McKay is the Field Assistant and has no regular work to do in the office except when he is writing up his notes and reports or arranging his collections in the Museum and at them he usually works until late at night.

5. Mr. Kirk, the Museum Assistant, and also Librarian, works at the collections and entry catalogues during the day and generally does the Library work in the evening after it is closed to the public.

The only other persons attached to the Dept. are the Messenger and Keeper who lives on the premises and is constantly on duty, and the Hand Engraver and Taxidermist who are paid for their work by the day under special agreement and from the nature of the work they perform it is advantageous to the service that they should have a whole hours interval. The last wood engraver died from a disease brought on by too close application and prolonged stooping and Government paid compensation to his widow.

The staff were subsequently exempted from strict application of the regulation.

Hector to the Minister of Mines, 26-7-1886
Te Papa: MU000013/003/001/0644

This memo is a response to a query about the number of specimens in the Colonial Museum. Unfortunately the list prepared by Hector is not attached to the copy in the Te Papa archives.

In compliance with your request I forward a return of the estimated number of specimens in the Colonial Museum, from which you will observe that by far the larger proportion of the collections are inaccessible to the public and almost equally to the offices of the department for carrying on the work.

This is especially the case with reference to the collections of fossils, ample space and appliances for comparison of which is absolutely to place the geology of the Colony on a sound basis. Moreover if it was possible to thoroughly sort, classify, name & describe the collection an increased number of duplicates could be weeded out for distribution to other museums in the Colony. Such distribution was contemplated as an important feature of the Col. Museum when it was first formed (see my Report App. Jour. H of R. D9 1866. With reference also to further utilisation of the Museum & Geological Survey staff as the basis of a Technical Mining School. See also D.25 1870).

The most pressing want is a workshop or commodious well lighted and warmed room about 80 x 40 feet and fitted with about 400 bins or movable boxes in four lines with two narrow tressels. This woud enable the collections to be thoroughly examined & stored in an accessible manner & permit of the drafting out of duplicates.

At the present time when the results of a field survey are received they quite block the place so that it is very difficult to arrive at correct deductions and to get out the Reports within reasonable time.

Such a slight building as is required could easily be erected at small expense in the yard of the Museum. If it was decided to make it part of a further extension, the best side would be the frontage towards Sydney Street, keeping the level of the present Museum so that the fall of the ground would give storage room underneath.

A building in this direction might in time be extended so as to admit of being utilised for the Public and Patent Library, Art Gallery & Educational Museum and also the necessary classroom and laboratory for a technical or Mining College. Such a plan was formerly sketched out and was under consideration.

James Hector

Colonial Secretary's Office to Hector, 5-12-1886
GNS Library

Sir,
The Government has had under consideration the desirableness of transferring the Geological & Meteorological Department from the control of the Colonial Secretary to that of the Minister of Mines, and has decided that the transfer shall be made.

I have therefore the honour to inform you that on the 1st January next the control and management of the abovenamed Department will be handed over to the Minister of Mines.

I have the honour to be
Sir
Your most obedient servant
[illegible signature]

Hector to Gore, June 1887
Te Papa: MU000013/003/0002/0676

This memo listed work to be undertaken by various members during Hector's absence in Australia. Mantell was officially in charge, but Gore supervised the staff and ensured that the place ran smoothly.

1. Meteorological – the Govt. Printer has the complete Mss. of the 1885 report.

2. Start a fresh pamphlet to end of 1887.

3. Mr. Kirk will put the Library in order and get out Catalogue.

4. Museum to be sorted over and proper heading tickets put on the collection. Mr. Kirk will look after the zoology and Mr. Park the fossils, and Minerals and Rocks under Mr. McKay's direction.

5. The end room of the Gallery is to be put in thorough order and what is of no use is to be boxed away – so also with the rooms at the back.

6. The Draftsman has been instructed to go with Geological maps and Mr. McKay is to assist him. Drawings are to be sent to Melbourne as early as possible.

7. Messrs. McKay and Park have reports to write. I will send a memo for the Minister's Statement.

8. Mr. Burton during my absence is to be kept at work on the collection and concluding Exhibition work which is to be finished as early as possible. He is to be directly under Mr, Kirk's orders and any failure or negligence on his part is to be reported to you. If he fails to carry out his work steadily immediate notice is to be given to him to leave.

9. No leave of absence is to be given without Mr. Mantell's knowledge and consent. Mr. Skey has permission to be absent on the forenoon of every second Monday.

James Hector

Minister of Mines (G.F. Richardson) to Hector, 18-10-1887
Te Papa: MU00095/004/0328

Will you kindly favour me with a confidential report of such savings as you may be able to suggest in the Geological & Meteorological Department.

Radical retrenchment is imperative in all departments & substantial reduction of expenditure necessary.

Please accompany report with a complete list of officers employed under you giving (1) their duties (2) length of service (3) and salaries.

G.F. Richardson.

Minister of Mines to Hector, 20-10-1887
Te Papa: MU00095/004/0328

Would you kindly let me have the information asked for in my memorandum of 18th Inst. before 12noon today?

G.F. Richardson

Hector to Minister of Mines, 20-10-1887
Te Papa: MU00095/004/0328

The work done under my direction is of several kinds and as the same officers perform several different duties it is somewhat difficult to apportion the exact share of expenses but it is somewhat as follows:

1. Geological Survey of the Colony — Costs £1,550
2. Laboratory Branch — Costs £500
3. Meteorological Branch — Costs £600
4. Museum — Costs £490
5. Publishing — Costs £425

There has been no material change in this expenditure for the last 20 years the few small increases to some of the officers salaries that have been made having been covered by savings effected by the appointment of juniors. It is therefore very difficult to suggest where a saving can be made if the above series are to be continued.

Hector then lists the staff with their duties using the memo of 1882 as a basis and amending it where necessary. Amended sections only noted below when relevant.

Colonial Museum. Collection and preparation of objects of N. History. Publication of catalogues and descriptive and illustrative works for Educational purposes.

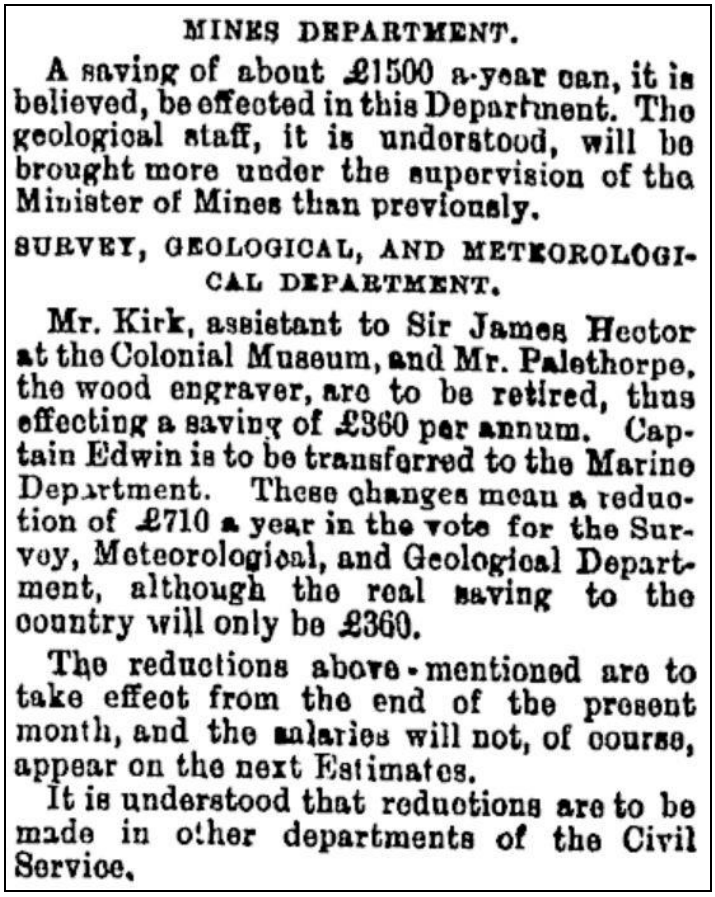
N.Z. Institute. Correspondence with Societies and Publication of Annual Volume of Transactions.

Botanic Gardens and General Management. For distribution of seeds and plants to Govt. reserves and public Bodies throughout the Colony.

Hector added to his own duties: 'Also on the N.Z. Senate of which he is the elected Chancellor'.

Analyst: W.Skey. 25 years 3 months service.
Clerk and Curator, also Meteorological Observer and Statist: R.B.Gore, 39 years service.
Weather Reporter, etc. Capt. Edwin 16 years service. Charged against the Meteorological vote since 1880
Museum Assistant and Librarian: T.W.Kirk, 13 Years service.
Field Assistant: James Park, 6 years 9 months service - was transferred to the Geological Survey Dept. on 1 July 1885
Messenger and Keeper: J. Bigg, 7 years service.
Under Field expenses Hector notes that 'Against this vote is also charged the wages of a taxidermist (Burton 12/- d p. day)'

Hector successfully avoided cuts to his Department until a new Liberal government was elected in December 1890, with a policy of cutting government expenditure. Within a few months there were changes, including the following cuts within the Mines Department:



MINES DEPARTMENT.

A saving of about £1500 a-year can, it is believed, be effected in this Department. The geological staff, it is understood, will be brought more under the supervision of the Minister of Mines than previously.

SURVEY, GEOLOGICAL, AND METEOROLOGICAL DEPARTMENT.

Mr. Kirk, assistant to Sir James Hector at the Colonial Museum, and Mr. Palethorpe, the wood engraver, are to be retired, thus effecting a saving of £360 per annum. Captain Edwin is to be transferred to the Marine Department. These changes mean a reduction of £710 a year in the vote for the Survey, Meteorological, and Geological Department, although the real saving to the country will only be £360.

The reductions above-mentioned are to take effect from the end of the present month, and the salaries will not, of course, appear on the next Estimates.

It is understood that reductions are to be made in other departments of the Civil Service.

Evening Post 11-3-1891

Under Secretary of Mines to Hector, 23-5-1892
GNS Library

I am directed by the Hon: Minister of Mines to inform you that in preparing the estimates for the current year, it has been decided to transfer the salaries of the analyst, the clerk and curator and assistant geologist to this Department, leaving you control of the Museum and Meteorological Stations.

As it is not proposed to make provision for the salary of the Draftsman it will be necessary for you to give that office notice of the termination of his services.
Xxx Elliot
Undersecretary

Hector to unknown recipient, 6-6-1892
Te Papa: MU000127/001/0001 – loose letter inside the Referred Letter Book

In reply to your letter of this date requesting me to forward an enclosed letter to the Hon the Minister of Mines I must decline to do so for the following reasons.

1st. It contains very indefinite charges against your fellow officers & myself which as chief of the Dept I should feel in honour bound to place in more explicit form before they are communicated to the Minister.
2nd. The letter refers to an arrangement for transferring your services to another Dept of the Govt service which would involve changes in the service which you have no right to suggest nor have I a right to criticise.

I am quite prepared under the --- circumstances, altho with deep regret to forward to the Minister an unconditional resignation of the situation which you at present hold.
I am etc
J. Hector

The intended recipient of the above letter is unclear, nor is there any record of the letter that Hector had received and was asked to forward to the Minister of Mines. The most likely person is Charles Pierard, the draftsman, who had recently been told that he was to be made redundant.

Hector to Minister of Public Works, 18-4-1894
Te Papa: MU000013/004/0001/0332

I think it right to inform you of the bad condition of the Museum & Laboratory buildings owing to the want of paint etc.

It is now nearly 12 years since the buildings were painted, & the timber is now perishing, the joints opening, & the roof leaking. In fact the damage going on is considerable & needs immediate attention. The roof should be properly stopped and repaired as well as painted & the gutters seen to.
James Hector

Hector to Under Secretary of Mines), 30-1-1901
Te Papa: MU000013/004/0002/454

In accordance with Ministers instructions I have handed over the keys of the Geological Laboratory to Dr Maclaurin (Mr Skey's successor) and who I understand is to be appointed an officer of the Mines Dept.

I take this opportunity to represent to the Minister that the present laboratory has been in use for over 30 years and is now in a very dilapidated state. Much of the lining is rotting, the floor and the roof is out of order, the lighting is quite unsuitable for advanced laboratory work, and above all the furnace and flues are in a very dangerous condition, so much so that they were not used by Mr Skey for years.

As the laboratory is a constant menace to the safety of the Museum which contains Government property of over £35,000, I would suggest that the present laboratory be dismantled and that a new one be erected as a separate building detached from any other, say in the rear of the Government Buildings.

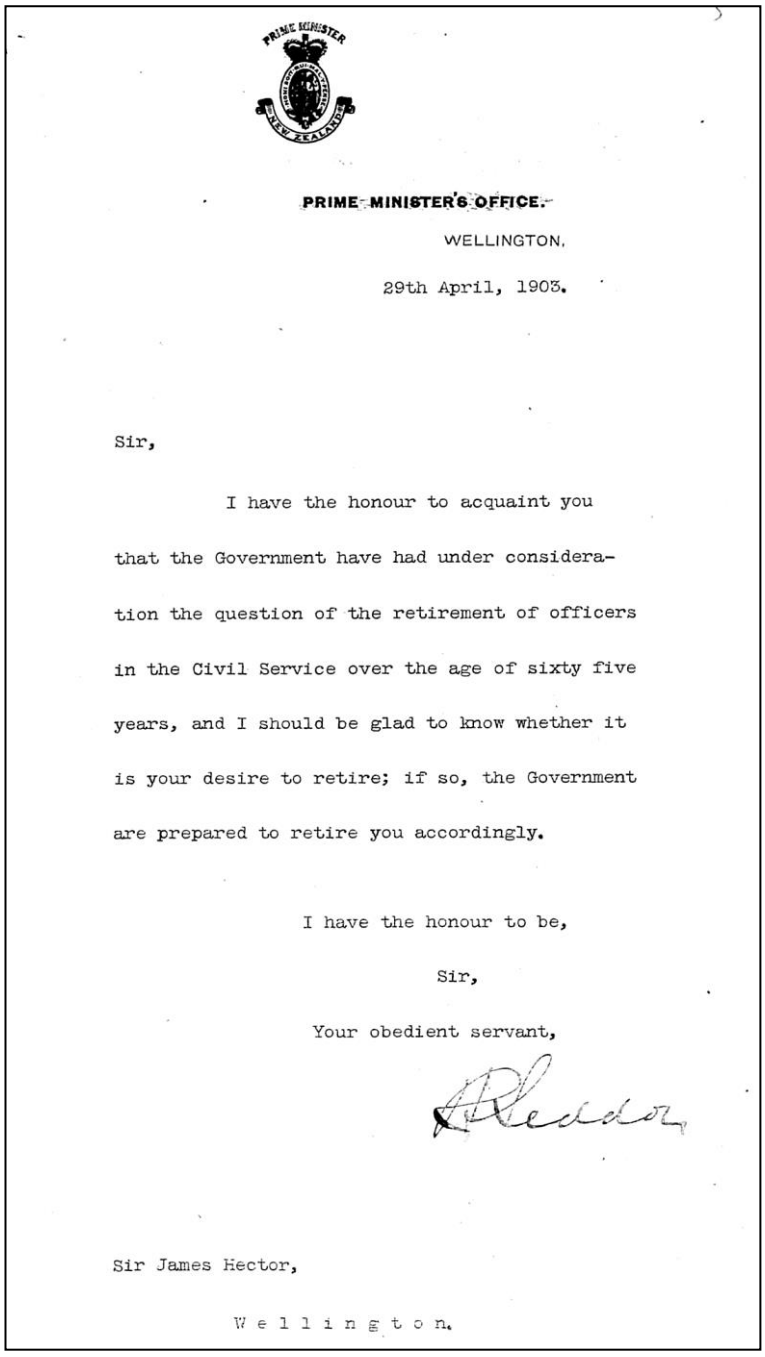
It might at first be built at small cost with iron on a timber frame. The fittings and contents of the present laboratory could be moved under careful supervision & the required connections for water, gas & electricity made, & in such a building operations could commence at once. The outside of the building could afterwards be enclosed as a brick wall, the inside lined with a suitable material either wood or asbestos felt. Meanwhile the work could go on continuously.

I will hand over the records of the laboratory to Dr Maclaurin, which extend backwards in Mss. Books for almost 38 years. All the essential parts of the reports to the number of 8,888 have been duly published and I will feel it a pleasure to aid in making this great record continuous under the new management. Through my position in the University I have become well acquainted with Dr Maclaurin's abilities and power of application and I feel much confidence in an appointment which I consider the Government has wisely made.

James Hector

Part 7: Hector's retirement

James Hector's decision to retire after 41 years in government service was formalised in an exchange of letters with Premier Richard John Seddon between 29 April and 13 May 1903. It seems likely, however, that there had been some preliminary discussion behind the scenes. Hector knew in advance that he had been invited to visit Canada by the Canadian Pacific Railway, and he was undoubtedly keen to undertake the trip while on paid leave. In any event, the exchange of letters took place quickly, and apparently amicably.



PRIME MINISTER'S OFFICE.

WELLINGTON,

29th April, 1903.

Sir,

I have the honour to acquaint you that the Government have had under consideration the question of the retirement of officers in the Civil Service over the age of sixty five years, and I should be glad to know whether it is your desire to retire; if so, the Government are prepared to retire you accordingly.

I have the honour to be,

Sir,

Your obedient servant,

R J Seddon

Sir James Hector,

Wellington.

GNS Library

Hector to R.J. Seddon 2-5-1903
GNS Library

Colonial Museum, Wellington
2nd May 1903

Sir
I have the honour to acknowledge receipt of your letter of 29th April informing me that the Government have had under consideration the question of the retirement of officers in the Civil Service over the age of 65 years, and asking if it is my desire to retire. In reply, I beg to state that it had already been my intention to ask to be retired at an early date, but in consequence of the current volume of the Transactions of the New Zealand Institute and other reports being in the printers hands I had delayed doing so.

I believe that I am entitled to three months leave of absence before commencement of pension dae. I therefore now apply to be relieved of my duties from 1 July 1903 on the above terms. I enclose the required form of "Application for Pension".

James Hector

R.J. Seddon to Hector, 9-5-1903
GNS Library

Prime Minister's Office
9th May 1903

Sir
In reply to your letter of 2nd May Instant, I have the honour to inform you that in accordance with your request you will be granted three months leave of absence on full pay as from 1st July next, and will then be retired on pension as from the 1st October next.

I take this opportunity of conveying to you on behalf of the Government its appreciation of the valuable services you have rendered to the Colony in various capacities during a lengthened official career, extending over forty one years, and more especially as Director of the Geological Survey and Manager of the New Zealand Institute: and my colleagues join with me in hoping that you may enjoy for many years your well earned pension.

I have the honour to be,
Sir,
Your obedient servant

R.J. Seddon
Premier

Hector to R.J. Seddon, 13-5-1903
GNS Library

Colonial Museum, Wellington
13th May 1903

Sir,
I have the honour to acknowledge the receipt of your letter of 9th May ---- intimating that I have been granted three months leave of absence on full pay from 1st July next and will then be retired as from 1st October next. In reply I have to thank you for your courtesy in attending to my application with such promptitude and also for your kind expressions of confidence in my efforts on behalf of the Colony during the past forty one years.

I shall be glad if you will also convey my thanks to your colleagues for the good wishes they extend to me.

James Hector.