A man *tenax propositi*: transcriptions of letters from Charles Knight to William Jackson Hooker and Joseph Dalton Hooker between 1852 and 1883

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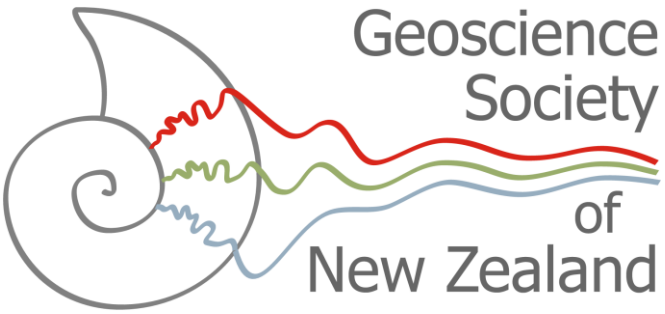

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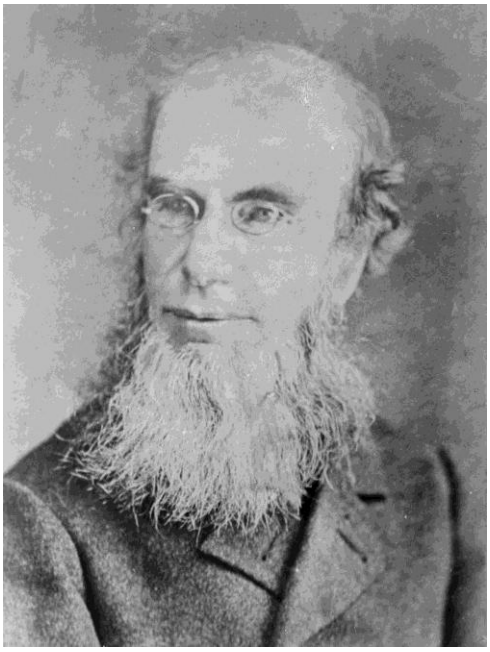

Figure 1: Dr Charles Knight FLS, FRCS
Alexander Turnbull Library,Wellington, New Zealand ¼-015414

Figure 2: Group taken in Walter Mantell's garden about 1865 showing Charles Knight (left), John Buchanan and James Hector (right) and Walter Mantell and his young son, Walter Godfrey Mantell (seated on grass).
John Buchanan Notebooks, 1949, 42. Collection of Toitū Otago Settlers Museum, Dunedin, New Zealand

Introduction

Charles Knight (1808-1891) corresponded for over 30 years with William and Joseph Hooker, father and son, successive Directors of the Royal Botanic Gardens at Kew for nearly six decades of the 19th century. This collection of 42 letters outlines the botanical work that Knight undertook as a dedicated amateur botanist, as well as giving some incidental insights into the workings of the New Zealand Government during this period from the shrewd observations of a pivotal civil servant. The letters also chart the course of J.D. Hooker's preparation and publication of the *Handbook of the New Zealand Flora* (1864-1867), the funding of which was of close concern to Knight. Today, little is published of Knight's professional and personal life, and his presumably very extensive professional and personal correspondence seems not to have survived, except in collections of correspondence of botanists (e.g. T.M. Fries, F.G.C. Arnold, W. Nylander and J. Müller Argoviensis) with whom he was in contact, mainly in the years of his retirement, post-1878 (see Galloway 2013a, 2013b, 2014). Knight's letters to Kew are the outstanding exception to this and provide notable insights into his life, work and interests over a span of 30 years, and cover his residence both in Auckland and Wellington in his long career as Auditor-General. They illuminate too how Knight operated as a mover behind the scenes, and which underscored his success as a civil servant on whom both Governors and Governments depended.

Charles Knight (Fig. 1), was born in 1808 at Rye in Sussex. In 1828 he enrolled at University College London taking a variety of medical classes as well as botany and chemistry. In 1840 he gained Membership of the Royal College of Surgeons and was elected FRCS in 1869. Between 1830 and 1840 he practiced in Canada but little is known of him during this period. In 1841 he left England as surgeon on the *Lord Glenelg*, the ship taking Captain (later Sir) George Grey and his wife to Adelaide, to be Governor of South Australia. The captain's increasing drunkenness on leaving Cape Town led to Knight taking over the charge of the vessel, confining the errant captain to his cabin and bringing the ship safely to harbour in South Australia. Grey was so impressed at Knight's natural competency that he gave him a position as a copying clerk and in 1843 he was in the Private Secretary's Office on a salary of £200 a year – Grey writing to him "…I am happy to avail myself of this opportunity of expressing my sense of the cheerful and unwearying industry with which you have for the last two years discharged your duties, the nature of which has necessarily thrown you into the most frequent and confidential intercourse with myself, and thus afforded me full opportunity of observing and appreciating your merits…"

In November 1845 Grey was appointed Governor of New Zealand and brought Knight to Auckland with him on HEIC *Elphinstone* (Low 1877: Vol. 2, Ch. 4) from South Australia. Grey appointed Knight to the post of Auditor-General in February 1846. Although he married Caroline Symes in 1844 in Adelaide, Knight lived for his first year in Auckland in bachelor's quarters with his architect cousin Frederick Thatcher (see below) and another architect, Reader Gilson Wood (1821-1895), firstly in a house in the Town, and from June to December 1846, in a house towards Mt Eden which they rented for £60. Knight and Wood were close friends of Thomas King (1821-1893), a businessman and later banker from New Plymouth, the father of Sir (Frederick) Truby King (1858-1938). Knight returned to Adelaide late in 1846 to bring Mrs Knight and their two children back to Auckland in the schooner *John Lord*

of 70 tons (Scholefield 1940; Galloway 1990, 1998; the late Margaret Alington (1920-2012) *pers. comm*. 2003). They were eventually to have five children (two sons and three daughters).

Knight's position thus made him an important component in NZ's small Civil Service. His love of exact measurement and an inexhaustible appetite for routine making him virtually indispensable to Government for over 30 years. Civil servants, such as Knight, kept gentlemen's hours, 10 a.m. to 4 p.m. on weekdays and 10 a.m. to 2 p.m. on Saturdays (Green & Singleton 2009), so that Knight had plenty of time for Botany, and he used it well. Starting with mosses, and making analyses of their cellular structure, Knight's drawings were sent by Grey with an introduction to his friend, Sir William Jackson Hooker, Director of the Royal Botanic Gardens at Kew. Hooker responded very favourably to Knight's tracings of a group of plants that Hooker knew well, and so by 1852 Knight had found his spare-time scientific vocation, microscopic work entailing close observation and detailed drawings, of mosses, then liverworts and then, most especially, of lichens. The Kew connection in turn helped eventually, to facilitate Knight's entrée into European and world lichenology. Besides his responsibilities to the Audit Office, Knight was often called upon to chair commissions of enquiry or to belong to committees of various kinds, and from 1861 to 1865 he was in charge of what was to become the New Zealand Meteorological Service (de Lisle 1986). His letters to Joseph Hooker amplify these additional official activities that he was called upon to perform.

Apart from his long, devoted and distinguished service to Government, Knight had a lively and informed interest in science, although he deprecatingly referred to these interests as "dabblings" and "dilettantism" (see below). His main botanical interests were with various cryptogamic groups. Cryptogams (spore-bearing, non-flowering, or lower plants as they have variously been designated), include the ferns, liverworts (hepatics), mosses, lichens algae and fungi. Knight began with the mosses but comparatively quickly became enthused with lichens which, from his 48th year, became his main botanical passion. He formed a well-chosen library of major lichenological texts, elaborated a large personal lichen herbarium (worldwide in its scope) and published on both New Zealand and Australian material. Knight made foundational contributions to New Zealand lichenology, adding 170 new names to the New Zealand lichen mycobiota between 1860 and 1884 (Knight 1860, 1871, 1875b, 1875c, 1876b, 1877, 1880, 1881, 1883, 1884a, 1884b; Knight & Mitten 1860), and also two contributions to bryology (Knight 1875a, 1876a; Galloway 2013d). Charles Knight also played a key role from the New Zealand end, in overseeing the writing of Joseph Hooker's *Handbook of the New Zealand Flora* (Hooker 1864, 1867), ensuring that this endeavor was completed on time and within budget (Galloway 1998). A significant part of the Knight-Hooker correspondence recorded here deals with the *Handbook*. Knight retired from Government service in 1878 on a substantial pension of £600 a year that allowed him to pursue his lichenological interests with renewed vigour, unhampered by the demands of high office. He visited Australia in 1880, collecting lichens from the environs of Sydney on which he published a major paper (Knight 1882). Knight also contributed 21 specimens to Hugo Lojka's fascicle III of the exsiccata, *Lichenes Universalis* (Lojka 1886; Galloway 2013b; Galloway & Vitikainen 2013) and described a number of Queensland lichens sent to him by F.M. Bailey and C.H. Hartmann (Bailey 1883, 1884, 1886, 1888, 1890; Shirley 1889a, 1889b).

Being a long-term friend of Sir George Grey was undoubtedly advantageous for Knight, but it also brought him enemies, and in the pages of William Sewell's journal, Knight is clinically demonised, being caustically referred to as "the Government financier" and "The Chancellor of the Exchequer of the Colony!"(McIntyre 1980). In October 1855 Sewell wrote in his journal: "…Amongst the (incapable) men who form the present Executive, one has a modicum of brains more than the rest, Dr Knight, the (socalled) Auditor General. (By the bye let me record a pun I made upon him. He used to be in the habit of finding out, noting, objecting to, then auditing in his Account all Sir George Grey's financial illegalities, which I said was according to the Rhadamanthian rule *Castigatque, auditque dolos* ['chastises and listens to their crimes' – Virgil, Aeneid, vi, 567]. He was Surgeon on board the Ship which brought Sir George out, and became a protégé of his.) It is supposed that he has been the secret moving spring of much of the political machinery of the Colony – at all events he has had the sole command of the Finance…" (McIntyre 1980).

In his own words Knight was "…a man *tenax propositi* [firm of purpose] and [I] like to carry out my schemes completely…" (see letter 20 below). His letters transcribed here show something of his single-mindedness and determination when dealing with the Directors of Kew. At the start of his correspondence with Joseph Hooker, Knight was 48 and Hooker 39. Knight's opening letter is far from deferential, and Hooker was left in no doubt as to the "calibre" of his new correspondent. It proved to be a very productive exchange over 27 years. The great sadness of course is that Hooker's letters to Knight appear not to have survived.

Charles Knight Correspondence at Kew

The letters printed below, are from three bound volumes of letters in the Kew Archives. Knight's letters to Sir William Jackson Hooker are found in Vols 74 and 75 of the Director's Correspondence (prefixed DC) [**Australian Letters 1851-1858, folios 87-89; Australian and Pacific Letters 1859-1865, folios 94-95**], while those to Dr (later Sir) Joseph Dalton Hooker are preserved in Vol. 175 of the Director's Correspondence [**New Zealand Letters Anderson-Winier 1854-1900, folios 928-977**]. While working in London at the British Museum (Natural) History (later the Natural History Museum) on preparation of *Flora of New Zealand Lichens* (Galloway 1985), between 1973 and 1975 I had a day each week in the Archives at Kew, transcribing copies of letters sent by New Zealand scientists to W.J. Hooker (1785-1865) and J.D. Hooker (1817-1911), successive Directors of the Royal Botanic Gardens. Among these, I found a long sequence from the Auditor-General Charles Knight which illuminated both his interest in, and collections of, New Zealand lichens, as well as his pivotal role in the commissioning and publication of Joseph Hooker's *Handbook of the New Zealand Flora* (Hooker 1864, 1867; Galloway 1998). Apart from letter 1, which is an extract only, all of the letters printed below are complete and as Knight wrote them.

Transcribed below are 5 letters from Knight to W.J. Hooker and 36 letters from Knight to J.D. Hooker. They are presented (as they are bound) in chronological order in the respective volumes. The originals are held in the Archives of the Royal Botanic Gardens, Kew, UK. The Kew reference is the first given to each letter (prefixed DC – Director's Correspondence). The first 25 letters (and letter 27) are written from

Auckland, with the remainder written from Wellington where Knight moved when the seat of Government transferred to Wellington where it sat for the first time on 26 July 1865. The move, a substantial logistical exercise, took place in early 1865, at a total cost of £54,665 ($5.6 million). Knight's underlining has been retained, and also his at times wayward spelling [David Monro is frequently designated Munro]. Knight never italicised systematic names, but in this account both systematic names and also the names of ships are italicised. Words that are either unintelligible or missing altogether are indicated by three dashes set in square brackets. As a careful civil servant and botanist, Knight possessed an extremely neat and legible hand (Fig. 2), and his letters are a pleasure to read.

Acknowledgements

• The Board of Trustees of the Royal Botanic Gardens, Kew gave their permission for the Knight letters to be reproduced. I am most grateful to them.

• Over the years I have received much help and advice from the Librarians and Archivists at Kew. Special thanks to Sylvia Fitzgerald, Kay Mortimer, Kiri Ross-Jones and Lorna Cahill.

• I am grateful to the staff of the Auckland Public Library for their help in providing photocopies of the William Jackson Hooker letters held in Sir George Grey Correspondence. Copies of Charles Knight letters held in the Sir George Grey Correspondence are available online: http://www.aucklandcity.govt.nz/dbtw-wpd/msonline/index.htm

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Summaries of the letters

1. Knight to W. J. Hooker, 28 September 1852

Copy of a letter written to Sir George Grey, with a set of notes and drawings of a number of New Zealand mosses. Knight asks Grey's assistance in sending these to the Royal Botanic Gardens, Kew in the hope that they may be useful during the preparation of *Flora Novae Zealandiae*. Knight confesses both his lack of knowledge of mosses, and the use of an inferior microscope, but his enthusiasm for having an accurately named set of plants in Auckland and Wellington (an herbarium no less) is plain.

2. Knight to W.J. Hooker, 26 November 1853

Sends tracings of mosses collected on Kawau Island, his first dissections using a new Smith & Beck dissecting microscope, the finest available in the country, and which took Knight into a "new world". Has begun work also on the Hepaticae. Is critical of moss systematics. He hopes that the English bryologist William Wilson will be able to see his drawings.

3. Knight to W.J. Hooker, 29 December 1853

Sends drawings of his dissections of New Zealand hepatics. Sir George Grey feels these are worth publishing and Knight enquires whether the Ray Society might publish them. Asks to be introduced to William Mitten, a leading English bryologist, with whom he is keen to make contact and exchange specimens.

4. Knight to W.J. Hooker, 8 September 1859

Sends thanks for a gift of North American mosses. Has started work on New Zealand lichens, working on them before breakfast. Has made dissections of most of the lichens in Schaerer's exsiccata (650 specimens!) and also of many New Zealand lichens. Sends a manuscript and supporting specimens on New Zealand *Verrucaria*. Is making a three-week trip "into the bush". Would like to purchase a set of Richard Spruce's South American lichens and mosses.

5. Knight to W.J. Hooker, 9 December 1863

Acknowledges safe arrival of a Wardian case of living plants sent from Kew. Reports on Sir George Grey having sent two cases of living plants back to Kew. Mentions that the Government has granted an additional £100, making Joseph Hooker's remuneration for preparing the *Handbook of the New Zealand Flora* (to include all of the cryptogams and seaweeds) £600. Has made his first attempts at lithography, and intends to engrave a series of microscopic drawing of New Zealand mosses and lichens.

6. Knight to J.D. Hooker, 14 April 1856

Acknowledges that care is need in microscopic work. Is overwhelmed with official work consequent upon the introduction of Responsible Government. Has gained much pleasure in reading Hooker's Himalayan Journals. Has been busy with lichens and has completed 80 anatomical drawings. Refutes Hooker's notion that a natural history study taken up "late in life" leads to "hair splitting and species mongering". Comments on Graphidaceae. Sends

tracings of lichens and asks Hooker if Churchill Babington would name them. Proposes that Babington write a paper on New Zealand lichens with Knight supplying the anatomical drawings, and asks what the costs might be for such a venture.

7. Knight to J.D. Hooker, 15 September 1857

Thanks Hooker for his trouble with the lichen paper and drawings, leaving him to send them to the Linnean Society for publication. Agrees that the most learned may blunder when starting on new research. Clings to his belief in special creation rather than accepting Darwin's new ideas on the origin of species by "transmutation". Agrees to Hooker's kind proposal to have him admitted as Fellow of the Linnean Society.

8. Knight to J.D. Hooker, 3 January 1859

Mentions the visit of the Austrian frigate *Novara,* and its scientists to Auckland and how their presence has given impetus to local scientific endeavours. Has taken them to see kauri forests. Takes Hooker and Lyell to task for publishing the "Darwin and Wallacean hypothesis of Creation!" and accuses Darwin's hypothesis of being merely Lamarck's old theory and an example of "that vicious logic which assumes facts and then invents an hypothesis". Tells Hooker that the General Assembly has made the Auditor General a patent office and that he can now devote all his own time to favourite pursuits without anxiety for the future. Says that Andrew Sinclair is in Nelson botanizing with Monro. Encloses his paper on the bitentaculate slug of New Zealand as being possibly useful for the Linnean *Transactions*.

9. Knight to J.D. Hooker, 20 January 1860

Indicates that £150 will be placed on the estimates, to recompense Hooker for out of pocket expenses incurred in producing *Flora Novae Zealandiae*. Proposes that Hooker should produce a new work on New Zealand botany together with a set of dried specimens for £300. He and Sinclair have recently examined a coalfield but the coal splits into small fragments on exposure to air.

10. Knight to J.D. Hooker, 28 June 1860

Indicates to Hooker that he has given him the wrong Christian name (William instead of Charles) in his lichen paper for the Linnean, and hopes that there will be time for a correction. Says that Sinclair has just read Darwin's *Origin of Species*, and never left his house for a week after.

11. Knight to J.D. Hooker, 29 October 1860

The Government, at Monro's motion has voted a sum of £200 to be placed on the estimates for Hooker. Sinclair is "away in the bush" north of Auckland. The impending war in the Waikato is fraught with danger and may put a stop to "agricultural and productive industry"

12. Knight to J.D. Hooker, 6 May 1861

Intimates the drowning of Andrew Sinclair in the Rangitata River while collecting plants in company with Haast. Sends a press notice of the accident. Is thinking taking up the Fungi. The Stafford Ministry is out. Mantell is now a

Member of the House and Minister for Native Affairs. Colenso is also a Member. Enquires about a New Zealand Flora in English and what costs may be involved in preparing and publishing such a work to include ferns, mosses and lichens. Declares Babington's descriptions of lichens to be "behind the times" but that Nylander's are "capital" except for the *Stictae*. Will call Darwin's theory a "dogma" no more, and mentions Sinclair as having been ashamed of him for not admitting it at once.

13. Knight to J.D. Hooker, 7 August 1861

Rejoices in Sir George Grey's appointment as Governor. Describes the prowess of Māori in defending their positions. Mentions Mitten and his help with preparing a paper on *Verrucariae* for the Linnean and what might be reasonable terms for such a collaboration. Would like Mitten to complete the set of mosses sent to Knight, but needs to know what the price would be for this as he does not want Mitten to "give" them. Mentions that Taranaki Māori have made peace on their own terms after talks with Donald McLean.

14. Knight to J.D. Hooker, 4 November 1861

A change of Ministry, a new Governor and "a disaffected native population" bring more work and scientific pursuits are made much more difficult, He misses Sinclair's stimulating companionship. Discusses the setting up of meteorological stations from Mangonui to Fouveaux Strait over which he has direction. Enquires about ozonometers. Has taken up phanerogams and has no difficulty with them. Colenso promises him duplicates of his collections. Has received from the Linnean copies of his papers on lichens and on the bitentaculate slug. Mentions mistakes that Mitten has made in one of these with respect to spore measurements. Would like to accompany Hector to the higher ranges of Otago on his explorations, once he is arrived in Dunedin. Mentions a possible new species of *Celmisia* from among Sinclair's Nelson plants.

15. Knight to J.D. Hooker, 6 May 1862

Feels that no dependence can be placed on Mitten and his work. Would like to have cryptogamic plants from all parts of the world for his herbarium, and if his salary is increased by £100 as he expects it to be, then he would happily spend £20 or £30 a year on additional specimens. Proposes that each of the Provincial Governments vote £80 towards the cost of a new Flora, or else a General Government grant of £450. He will consult with Mantell on the matter, but keep in the background himself. Dr Hector has arrived and everyone is pleased with him. He has come "armed with instruments sufficient to test everything in the heavens above and the earth beneath".

16. Knight to J.D. Hooker, 11 September 1862

Tells Hooker that the evening before, the House voted to make £500 available for the expenses involved in producing a Manual of New Zealand Botany. Knight has obtained that same day assurances from all the Members present, except one, for provision of a further £50 if they work is to include the algae. He recommends that the Government should make a final grant of £600 for the cost of the Handbook which will be based of Bentham's Flora of Hong

Kong. Asks for a numbered list of the plants sent to Kew by William Colenso. Wishes Hooker "quickly through your work, if you undertake it"

17. Knight to J.D. Hooker, 11 September 1862

Adds that if Hooker does not include the algae in the *Handbook* he is to receive only £450.

18. Knight to J.D. Hooker, 11 September 1862

List of guarantors of a sum of £100 in addition to the sum voted on 10 September for completion of the *Handbook* by inclusion of the algae.

19. Knight to J.D. Hooker, 30 October 1862

Asks Hooker when he would need the remittance from the New Zealand Government for his work on the Manual of the New Zealand Flora.

20. Knight to J.D. Hooker, 2 May 1863

Seeks clarification from Hooker as to his willingness to include all of the cryptogams in the proposed new flora, as the guaranteed grant of £600 is to include flowering plants and all of the cryptogams, and that no mistake on Knight's part was made in this matter. Mentions that he intends sooner or later to have an illustrated Manual of New Zealand Geology, drawn as much as possible from the field. Asks again for a set of Spruce's South American mosses and lichens.

21. Knight to J.D. Hooker, 31 May 1863

Is pleased that Hooker has agreed to do the complete work for £500. Suggest that Māori names for native plants should be included in a list at the end of the book. Would like to help Hooker with drawings of mosses and hepatics, and is thinking seriously publishing an Atlas of moss drawings. Is critical of contemporary moss systematics and systematists. Offers to send a paper on mosses complete with keys to genera and species – sends his attempt with *Isothecium*.

22. Knight to J.D. Hooker, 4 October 1863

Suggests to Hooker that the time is inopportune for his sending specimens of New Zealand mosses. As Comptroller of Pay for the militia fighting in the Waikato War, he has no time for scientific pursuits. Tells Hooker of his skill as a paymaster, and of the troops holding him "in wholesome terror". Expatiates on his involvement in setting up the "Money Order business" and also looking after meteorological observatories and managing the Patent Office. States that the title of Hooker's book must be "A Handbook of the New Zealand Flora". Grumbles at John Gould caricaturing his original version of the head of *Phascolomys latifrons* in a volume of *Mammals of Australia*. Is about to start engraving on stone once the tools have arrived from England.

23. Knight to J.D. Hooker, 31 October 1863

All is in train for an additional grant to Hooker of £100. Has completed arrangements for a military Savings Bank. Is saving the Government £3000 a year. Is to have an addition to his salary. Has just seen *Flora Tasmaniae* and

notes the great similarity between Tasmanian and New Zealand mosses. Refers to Mitten's "ill digested descriptions".

24. Knight to J.D. Hooker, 24 November 1864

Forwards a few lichens. Likes the style of the first volume of the Handbook. Disagrees with the dedication to Sir George Grey feeling that Dr Monro as Speaker of the House would have been a more worthy choice. Hector is busy with the Dunedin Exhibition. Asks again for any of Spruce's South American cryptogams.

25. Knight to J.D. Hooker, 25 May 1865

Is living in Wellington where the seat of Government now is. However, he has been sent back to Auckland to put things to rights. Remarks that since the war he has had "no peace". Is now a convert to Darwinism "the Darwinian Theory is the greatest stride ever made".

26. Knight to J.D. Hooker, 11 August 1865

Is amused at Hooker's agonies in dealing with mosses and lichens. Warns against Mitten as a poor bryologist. Thinks that half of Nylander's species in *Sticta, Stictina* and *Ricasolia* "need the knife". A new Audit Bill is to give him a salary of £800. Colenso is the only person in the House opposing this. Hector is to move to Wellington where Knight will see more of him. He. Intends botanizing in the Nelson ranges with Monro and Rough. Sends New Zealand lichens and drawings for W.A. Leighton.

27. Knight to J.D. Hooker, 29 August 1865

The Government is selling 30-40 copies of the *Handbook* to interested parties. Ministers propose £500 on the estimates for Hochstetter's Geology of New Zealand. Has now relinquished the Comptrollership of militia pay. Dr Masters has asked him to contribute to the *Gardener's Chronicle*. Hector is busing arranging the Colonial Museum. He is sorry to hear or Sir William Hooker being unwell.

28. Knight to J.D. Hooker, 16 July 1866

Sends a money order for Schimper's mosses. The Government has sold all the copies of Vol. I of the *Handbook*. Is taken up too much with chairing commissions of enquiry. Sir George Grey wants him to undertake the illustrations of the lichens mosses and grasses of New Zealand, but he has hastily withdrawn from this proposal. Monro is now Sir David Monro and is again elected Speaker of the House.

29. Knight to J.D. Hooker, 7 November 1866

Acknowledges the safe arrival of Schimper's mosses and encloses two money orders in payment. Is glad to hear of the printing of Vol. II of the *Handbook*. Is now very pleased with Vol. I, and hopes that Hooker derives great pride from its production. Hector is at the West Coast diggings, and the Governor has joined the Colonial forces at the front between Wanganui and New Plymouth.

30. Knight to J.D. Hooker, 17 April 1867

Acknowledges request for ripe *Phormium* seed. Disagrees with Nylander's division of *Sticta.* Is very pleased with Spruce's American mosses. Will send two sets of New Zealand lichens, one for Nylander and one for Kew, on the understanding that Nylander provides accurate names for them all. Is making up a set of mosses for Schimper and of lichens for Leighton.

31. Knight to J.D. Hooker, 25 April 1867

The Colonial Treasurer has overlooked to pay Hooker for the second volume of the *Handbook.* Knight has sent the Colonial Secretary a minute pointing out the conditions for payment of the second volume plus ancillary expenses incurred. Mr Morrison is instructed to pay Hooker £300 "In full of all claims on account of the Handbook". The *Phormium* seeds have been packed in a bag ready for transport. A trial of their germination showed 70% viability.

32. Knight to J.D. Hooker, 8 June 1867

Has sent a box of lichens for Dr Nylander in Paris (only the *Stictas*) and asks Hooker to forward them, and also to introduce him to Nylander.

33. Knight to J.D. Hooker, 8 October 1867

Is pleased that Hooker is now satisfied with all arrangements concerning the *Handbook.* Refers to the Cabinet presented to Hooker by the New Zealand Government, as a token of esteem not only to him for all his work on New Zealand Botany, but also to Sir William Hooker. Asks Hooker to either retain the New Zealand *Stictas* for Kew or else distribute them to any European lichenologst who may be interested. Is sending a collection of mosses to be forwarded to Schimper in Strasbourg.

34. Knight to J.D. Hooker, 6 November 1867

Thanks Hooker for forwarding the *Stictas* to Nylander who has now offered to name Knight's New Zealand lichens. Mentions the unpleasant nature of the recall of Sir George grey by the Home Government. Has an acre of ground in Wellington where he has built a comfortable house, but cannot avail himself of Hooker's offer of seeds from Kew for his garden, which is already full of trees and shrubs.

35. Knight to J.D. Hooker, 17 December 1867

Is off to Auckland where he will obtain *Thuja* seeds for Hooker. Is sending a set of New Zealand lichens for Nylander and would like Hooker to forward them. Grey will return to England in January with the adopted daughter of his half brother, Sir Godfrey Thomas. The Government has passed a law making permanent provision for Hector, the Colonial Museum and the New Zealand Institute. He will send a copy of the Act.

36. Knight to J.D. Hooker, 20 July 1874

Mentions that he will send a copy of his Presidential Address to the Wellington Philosophical Society. Sven Berggren from Lund is in Wellington, but is not able to meet the costs of his extended travels in South Island, since the Canterbury Provincial Government declined to support his visit. He has made many discoveries of mosses.

37. Knight to J.D. Hooker, 21 November 1874

Has been examining lichens collected by Buchanan and named by the Scottish botanist James Stirton and gives his opinions on these indicating that a number of Stirton's names refer to taxa already named by Nylander.

38. Knight to J.D. Hooker, 26 April 1881

Is sending a box of New South Wales lichens to his London agents for delivery to Kew, together with a paper and drawings of new species for publication by the Linnean Society. Tells Hooker he has retired on a pension of £600 a year and that his work is now "…in the use of the Lathe and in the study of Lichens". He has received a set of north European lichens from Professor Fries in Uppsala. Intends to visit Australia for a month to botanise in the Blue Mountains.

39. Knight to J.D. Hooker, 3 April 1882

Thanks Hooker for the copy of his Presidential Address to the British Association. Discusses the occurrence of fossil plants in polar regions and possible reasons for this. Tells Hooker that his paper on New South Wales lichens was not after all sent on the ill-fated S.S. *Tararua*, and had in fact reached the Linnean Society who now ask for him to provide a suitable introduction to it, in time for the November meeting.

40. Knight to J.D. Hooker, 14 June 1882

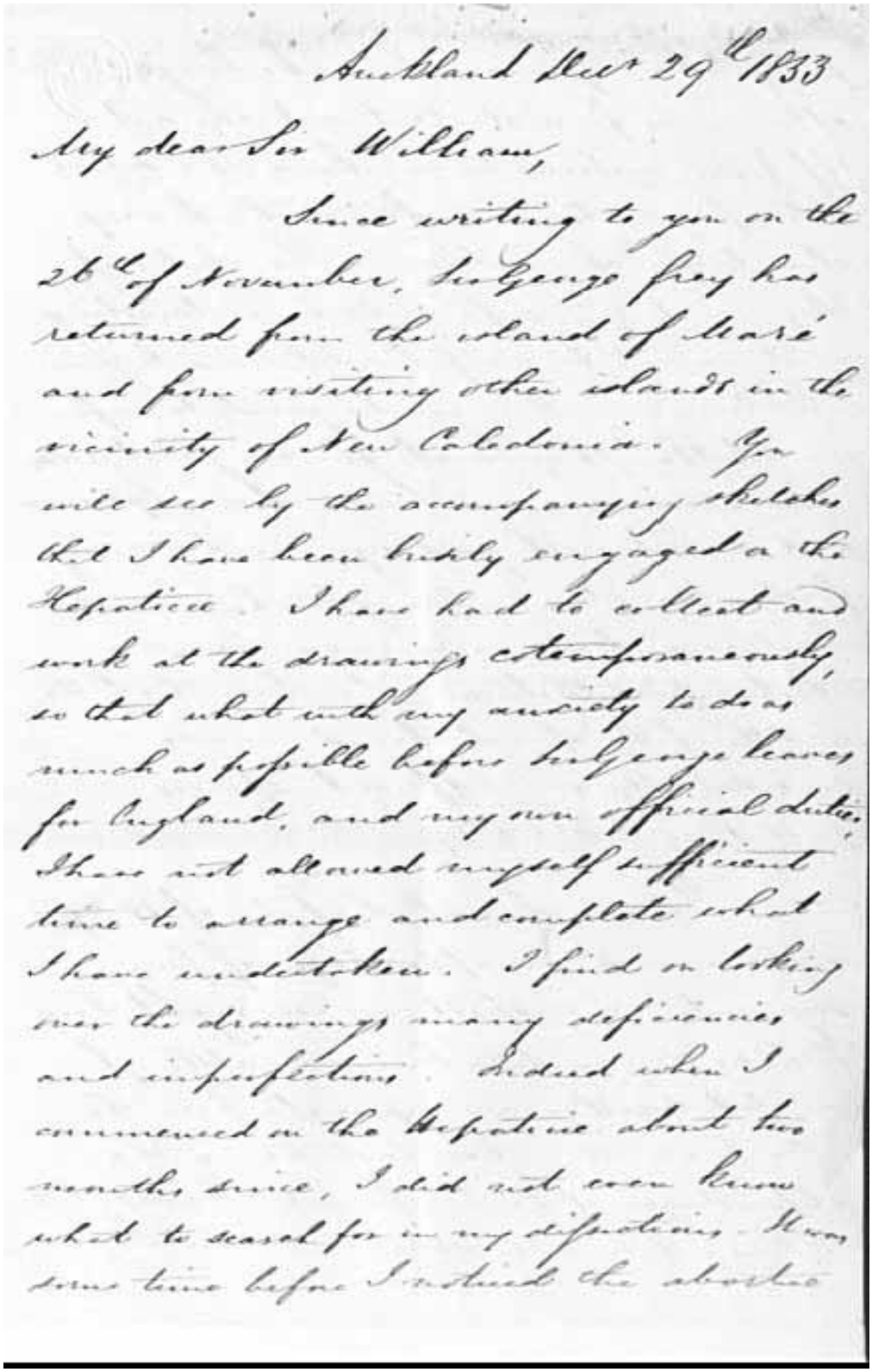
Tells Hooker that he has written some introductory remarks for his paper on New South Wales lichens for the Linnean Society, but has heard nothing from the Society about it. Asks Hooker's help to see what the situation is.

41. Knight to J.D. Hooker, 31 July 1882

Notes that his paper on New South Wales lichens was published in the Linnean Society *Transactions* in March. Thanks Hooker for his help with this, but is critical of the Linnean Secretary for not contacting him about publication.

42. Knight to J.D. Hooker, 24 September 1883.

A note accompanying a large consignment of New Zealand lichens to Kew, with a list of named specimens sent. Knight enquires after named duplicates of exotic lichens from Kew that could be spared as a help to his own lichen work. Discusses the properties of Canterbury's northwest winds, and asks for details of Tyndall's meteorological researches



Auckland Dec 29th 1853

My dear Sir William,

Since writing to you on the 26th of November, Sulpenge frey has returned from the island of Maré and from visiting other islands in the vicinity of New Caledonia. You will see by the accompanying sketches that I have been busily engaged at the Hepatice. I have had to collect and work at the drawings extemporaneously, so that what with my anxiety to do as much as possible before Sulpenge leaves for England, and my own official duties, I have not allowed myself sufficient time to arrange and complete what I have undertaken. I find on looking over the drawings many deficiencies and imperfections. Indeed when I commenced on the Hepatice about two months since, I did not even know what to search for in my dissections. It was some time before I noticed the absence

Figure 3: First page of letter from Knight to W.J. Hooker, dated 29 December 1853, typical of Knight's neat and legible hand (Kew DC 74, 89).

Transcriptions of the letters from Charles Knight

Numbered notes are placed at the end of the letters, starting at page 70.

1. DC 74: Folio 87: Auckland - 28 September 1852 -to W.J. Hooker

[Extract of a letter from Charles Knight Esq., to Sir George Grey KGB sent by Grey to Sir William Jackson Hooker]

"…An emulative desire to try my strength, led me to investigate the mosses of New Zealand. I have very imperfect reasons for doing so my microscope being imperfect and useless for dissecting purposes. I send herewith a few tracings of the results, I do not know whether they are worth transmitting to the Hookers at a time when they are preparing under authority a complete descriptive work on the Botany of New Zealand; but if your Excellency is of the opinion they are worth the trouble of transmission to Europe, I beg would you do me the honor [sic] of transmitting them. The idea only occurred to me a few days since; so that I had no time to complete anything other than slight tracings of my drawings. You will observe that I commenced with copies on writing paper. It strikes me that if the Botany of these Islands is of sufficient interest and to the Government of Great Britain to warrant a small outlay on the subject, it is at least of sufficient lure, to make it most desirable to have in our museums at Auckland and Wellington a collection of our plants correctly named. Should these sketches prove of any use or interest, one can with better grace request to be furnished with the names of the mosses. I have not myself ventured to give the specific names I have found for the mosses as we have no complete descriptions here. I am so ill provided with specimens as to be scarcely able to furnish names for each of the sketches.

<u>Rough Notes on Mosses</u>

1. The microscope used in the preparation of the original drawings is of a very inferior description.

2. The drawings were made on my first examination of mosses. Owing to the imperfection of the instrument and my want of knowledge on the subject, many fruits have been overlooked, which I now find are of importance. I shall wait the receipt of one of Smith & Beck's dissecting microscopes before proceeding in these investigations.

3. I observe that the tissue of the true *Hypnum* is prosenchymatous; the length of the cells being many times greater than the width. In the *Leskea* and *Hookeria* the cells are hexagonal, thus; [drawing of 5 hexagonal cells]. The *Hypni* with hexagonal cells are almost <u>generically</u> different from the true *hypni*.

4. Payer's arrangement which separates so widely *Leskea* from the *Hookeria* must surely be defective.

Funaria. There are two or three species of *Funaria* No. 21, and 69. The transverse projecting lamella in No 21 are angular: without a dissecting microscope I am unable to push the investigation further; probably the inner peristome is originally attached to these lamellae.

Bartramia. Nos 65 and 89. Probably a *Bartramia*; the well defined transverse lamella or bars of the outer peristome is characteristic.

Trichostomum. The *T. perichaetiale* of Hooker has not been discovered among the Auckland collections. The *Bachela* No. 64 (a) (seldom with twisted teeth) resembles it. There is another *Bachela* (*Tutula*) NO. 86. As Raoul's catalogue contains *Bachela*, is there a mistake about the *Trichostomum*? Is *Bachela* No. 64 a?

If my memory serves me Endlicher describes the genus *Leucodon* with short teeth. *Leucodon calycissus* No 20 has not by any means short teeth. The hood perhaps is not truly mitriform. Are the teeth of the peristome awl shaped?

No. 74 quite different from any other genus found in the Northern part of New Zealand. The teeth are opaque and the divisional lines semi transparent.

Desmatodon. Two species No. 91 and No. 64 only one mentioned in Raoul.

No. 71 *Hookeria*, the carpellary filaments are not to be mistaken for docims (?) of a Leaf.

No. 76. Probably a *Hypnum*, only one plant found in fruit with the peristomes nearly destroyed. The remains of the inner peristome are shewn in the tracing. It is carinate sulcata, but the tissue of the leaves is hexagonal.

No. 39a and 39 are similar. In 39 the mouth of the sporangium is oblique, the branches pruinate.

No. 44 and 77 the common leaves have hexagonal cells.

No 50, 50a, 63a and 75a are probably the same, they are certainly not the same as No. 56 which I take to be the ? *Preclongum* 92 (a) closely allied to the above but the leaves veinless.

No 45 (a) differs from the *H. comorum* in the point of the leaves being much shorter.

(Sd) Charles Knight

N.B. There is no No. 44 among the specimens & drawings sent to W.W. [added by WJH]

The full text of this letter that Knight wrote to Grey is given in Galloway (2013d)

2. DC 74: Folio 88: Auckland - 26 November 1853 – to W.J. Hooker

My Dear Sir William

An unexpected opportunity of enclosing a letter to you offering itself this morning, I made a few tracings of Mosses collected a fortnight since on the Island of Kawhau – if new I trust they will arrive in time for Dr Hooker's interesting work[1]. Having only three or four specimens of the Physcomitrium (69b) I made a careful dissection of it; the tympanic covering of the columella was loosely attached to the capsule; there was no trace of peristome. This was my first dissection with a new achromatic dissecting microscope of Beck and Smith, sent out to me – this admirable instrument has opened a new world to me – I may truly be said to have been working hitherto in the dark. To try my strength with this new aid I made an examination of the pistillidium and antheridia of a *Bryum* found together with the same plant. I send the sketch of the dissection. Being struck with your remarks in the Musci Exotici[2] on the peristome of the *Leptostomum macrocarpon*, I made also an examination of the Capsule of that moss (vide tracing). The internal membrane of the *Leptostomum* is cellular, attached firmly to the mouth of the capsule – below the attachment is a fold of the membrane shown by a dark line in the drawing, above the membrane becomes thin, but is not easily dissected off entire. The pseudo-teeth are the irregular torn edges of the membrane. These teeth following the contour of the covering operculum, necessarily bends inwards.

I have just commenced the Hepaticae. I shall have an opportunity of sending you tracings of my work on the return of Sir George Grey from the Islands adjacent to New Caledonia where he is gone with Bishop Selwyn.

You smiled I dare say at my presumption in fancying that the existing arrangements of the Mosses are unsatisfactory. But it seemed to me that at least the genus *Leskea* must sooner or later break down; and now I see in the Musci Exotici that you yourself have entertained the same view. When the genus *Omalia* which I find in Endlicher is a *Leskean* genus, and therefore should have no intermediate ciliola, has not only these appendages, but so closely does the double peristome in both *Omalia oblongifolia* (76b) and *O. auriculata* (77b) resemble that of the *Hypnum distichum*, that in drawing the plants it seemed a waste of time to make separate drawings. Of the peristomes and I simply noted that the inner and outer peristomes are as shown in sketch 77 (*Hypnum distichum*) - I may here mention that in the tracings of 77b and 76b. I copied in addition (at least such is my impression) the drawing of the peristomes of the *Hypnum distichum*, but neglected to make a note of it for your information. Again the Hypnum falcifolium which has also intermediate ciliola is, I find, to be arranged besides the genus *Omalia*, although its leaves have the peculiar reticulation of the true *Hypna*, which the *O. oblongifolia* & *auriculata* have not; while, on the other hand, the *Hyp. furfurosum* which has the hexagonal cells like the *Omalia* is retained among the *Hypna*. Then the *Racopilum australe* which at the first glance, and on careful examination closely resembles the *H. furfurosum* with the exception of the mitriform hood (vide specimens herewith) is placed by Payer next to the *Jungermannia*, although the *H. furfurosum* is arranged next to the Ferns. You will observe that in both these mosses the hoods are covered with confervoid hairs.

Mr Wilson[3], for whose List of N.Z. mosses I am much indebted, observes on No. 69 (*Physcomitrium*) that the specimen is too scanty for complete determination but he saw no trace of peristome. I thereupon sent him two or three other specimens. I am now able to send a tracing of a careful dissection of the only specimen I have. I find no trace of teeth; the internal membrane is exhibited in the drawing; the detached but slight discolorations on the edge of the membrane seem to arise from the decomposition of the contents of the cells of the operculum above – nothing of these would probably be seen in a fresh plant; in these was seen no trace of cells in the membrane, but of course it is cellular in its structure. The shading round the edge of the operculum and the mouth of the capsule is intended to represent the coloured ring which is frequently seen in other mosses and may perhaps be the annulus, but I could not succeed in demonstrating its presence. As Mr Wilson is now richer in specimens than I am, he will probably have already determined whether there is an annulus. Mr Wilson will be interested in the new *Physcomitrium* (79b). I trust he will have an opportunity of inspecting the tracing.

Believe me
Dear Sir William
Faithfully yours
Charles Knight

3. DC 74: Folio: Auckland - 29 December 1853 – to W.J. Hooker

My Dear Sir William

Since writing to you on the 26th of November, Sir George Grey has returned from the island of Maré and from visiting other islands in the vicinity of New Caledonia. You will see by the accompanying sketches that I have been busily engaged on the Hepaticae. I have had to collect and work at the drawings contemporaneously, so that what with my anxiety to do as much as possible before Sir George leaves for England, and my own official duties, I have not allowed myself sufficient time to arrange and complete what I have undertaken. I find on looking over the drawings many deficiencies and imperfections. Indeed when I commenced on the Hepaticae about two months since, I did not even know what to search for in my dissections. It was some time before I noticed the abortive pistillidia. You must make large allowances for a student entirely cut off from systematic works on the subject of his pursuits, and often without any clue to the characters. The slides if they reach you safe will be interesting and must be useful additions to your collections. Will you be good to inform me whether they reach you in good order – the specimens are preserved in glycerine and sealed with gold size, and are my first attempts. Those sketches marked "*Frullania*" have never more than one abortive pistillidium. I notice that the width of the spiral thread varies considerably in different species (vide 18a & 18 b. b. b.)

The involucral leaf (2) of (18b) is shown with an appendage of four segments. I suspect an oversight here. Perhaps the middle laminae although united together are separate from outer laminae – these last being the appendages of the involucral leaves; but I have not time to determine this at present.

Sir George Grey thinks the sketches are worth being lithographed; but I do not think they are fit for publication in their present state; the original drawings were not made with any reference to publication, and many parts of them would require to be reduced and drawings of the entire plant supplied. Sir George does not mean that the publication would pay, but that the loss would not be more than about half the cost; while the publication would be useful and creditable to the colony. Possibly the Ray Society[4] would cooperate and bear part of the expense in which case I would complete the drawings and render them more deserving of publication. I should certainly like to be informed whether the Society, if I furnished drawings of minute cryptogamic plants of unquestionable merit and novelty, would consider the publication of them at their expense as within the objects of their association, and whether or not they would be likely to publish them.

I shall be obliged if you would introduce my name to Mr Mitten[5] as I should be happy to receive any communication from him or furnish him with any information respecting the Cryptogamic botany of these Islands I am able to afford him.

Believe me
Dear Sir William
Very faithfully yours
Charles Knight

4. DC 75: Folio 94: Auckland - 8 September 1859 – to W.J. Hooker

Dear Sir William

I have received your kind present of North American Mosses[6] for which I beg you to accept my most grateful acknowledgements. To a solitary student collections authoritatively named are most acceptable, and to me particularly necessary, as really I have not time to devote to their identification from written descriptions. I am at work at the Lichens of New Zealand. I generally give my spare time before breakfast to them. I have made drawings and microscopic measurements of most of Schaerer's Lichenes Helv. Exsic[7]. and of the whole of the new Zealand Lichens. I am this stored with much new information. I have forwarded by this mail a paper on the *Verrucaria* of New Zealand with dried specimens. These may perhaps interest Dr Hooker as he might wish to some use of them in his Flora of Van Diemen's Land[8], if they should be received before the completion of that work. I had not time to make up a collection of the *Verrucariae* for Dr Hooker but will do so on my return from a trip into the bush. I start this afternoon and will return in about three weeks. I should have sent the paper through Dr Hooker, but I was afraid it might in some way give him unnecessary trouble. I am desirous of obtaining specimens of the Lichens of South America. There is a gentleman of the name of Spruce[9] collecting in South America. I should think myself fortunate in obtaining at the usual prices a set of his collections of Lichens and Mosses

Believe me, Dear Sir William
Yours truly and respectfully
Charles Knight

5. DC 75: Letter 95: Auckland - 9 December 1863 –to W.J. Hooker

My Dear Sir William,

Sir George Grey has requested me to acknowledge the receipt of your kind note of the 19th May last. The Wardian case[10] arrived in good condition – most of the plants are living. His Excellency would have written to you himself by the present mail but the extraordinary demands on his time on account of the present active military operations and the pressing business of the General Assembly will, I fear, prevent his doing so.

The Wardian cases, two in number, were returned to Kew by the steam ship "Himalaya" an excellent opportunity and it is expected that the plants they contain will arrive in first rate condition. Among other plants, the Governor has sent the *Dacrydium plumosum* two species of New Zealand *Cordyline* and one Rarotonga species and some ferns from Fiji. Captain Lacey has undertaken to give you immediate intelligence of the arrival of the ship in England. His Excellency has taken this matter up with his usual energy and intelligence and wishes to secure still further your valuable aid in introducing into this colony as many interesting plants as he can. These he will propagate in his island of Kawhau[11] from whence he will extend their cultivation throughout these islands. He hopes you will kindly direct the Wardian cases to be sent again to Auckland with such living plants as in your judgement should be introduced here, and he will undertake on his part to return them to Kew filled with living plants. His Excellency has many opportunities of securing valuable collections not only of New Zealand plants but of those of the islands of the South Seas; and he wishes you to inform him what plants you are desirous of adding to the Kew collections and he will endeavour to obtain them.

You will be pleased to learn we have secured for Dr Hooker an additional vote of £100 making altogether £600 for the Handbook of the New Zealand Flora which is to include all the Crypts and Seaweeds. This will be in accordance with your original proposal to the British Government that the author should receive higher remuneration for the Crypts. Dr Hooker will now be able to secure the valuable aid of Dr Harvey[12] for the seaweeds. Mr Stafford[13] on his return from Europe said that you blamed us here for doing so little in acknowledgement of Dr Hooker's services. I am sure you are better pleased with us now.

Within these few days I have made an attempt at engraving on stone – I find no difficulty in it; I enclose my "very" first and only attempt – it was done merely to learn the touch – I intend to engrave a series of microscopic drawings of the analyses of Lichens and Mosses of New Zealand. Your own beautiful work, the "Musci Exotici" is an excellent model; for an artist, and I may say ex cathedra, it continues to stand preeminent as a work of scientific illustration.

I enclose also a list of the dead plants received from Kew by the "*Queen of Beauty*"

Believe me, Dear Sir William
Yours very faithfully
Charles Knight

6. DC 175: Folio 928: Auckland - 14 April 1856 – to J.D. Hooker

My Dear Dr Hooker,

I have received your kind letter of the 15th March 1855 and shall bear in mind the necessity of great care in working with the compound microscope and shall neglect no precaution to guard against similar deceptions. I had obstinately persevered in my botanical studies when I was overwhelmed as I still am, with official work consequent on the introduction of responsible government in New Zealand. Our friend Sinclair[14] is preparing to go out of office – in a few days it will be determined by the House of Representatives what shall be the retiring pension. As for myself I am likely to be left in office; but in a new and isolated position; exposed to constant attacks and my time wasted in Committees of the House – my patience worn out in defending myself against the attacks of men who make their political capital at my expense. I had thought after 15 years of hard work to settle quietly to the work of my office, I was in fact getting into a fool's paradise – I speak in the way of the world – and was filling my shelves with scientific works – I was mastering Airy's[15] parts and gaining a carte du pays for a campaign into the [---]. Into the turmoils and fierce contests and the abominable trickery of colonial politics which properly do not belong in my office.

May I express to you the pleasure I received on reading your work on the Himalayas[16], and congratulate you on the distinction you have won for yourself in that outstanding performance. Extraordinary is the amount of intellectual labour bestowed on the undertaking, in that toil which never ceases and that happy perseverance which enabled you to do everything at the right and fixed time. Your treatment of the scenery is quite artistic. The desolate and dreary aspect of the Thibetan passes, contrast finely with the vivid representation of the beautiful mountain scenery and vegetable profusion in the neighbourhood of Darjeeling, and it adds to one's self esteem that a member of the medical profession should have executed so great a task in so noble a manner and should have brought it before the world full of the graces of a manly intellect.

Sir William Denniston [sic][17] has written to Governor Browne about the N.Z. Flora. Sinclair has had his copy bound for a presentation copy to the Library of the House of Representatives. I hope for our credit something will be done as a mark of our appreciation of the work. Dr Monro[18] unfortunately is not a member of the House.

I have been busy with the lichens. I have completed about 80 drawings of the asci, sporidia etc. I now draw with the aid of the Camera and have no difficulty in using it. I persevere. I am not quite certain that you are correct in your opinion that hair splitting and species mongering is owing as you state to a deficiency of early education in "Natural History as with all studies taken up late in life". What is meant by "late in life" I don't exactly know; but if you mean that when the intellect is sharpened by the work of years and when its tendency is to doubt, that it is then least fitted for original and new investigations then I believe you are mistaken. But I see clearly that it takes necessarily a long time to become acquainted with the facts of natural history, and while ignorant of them, you cannot generalise, and are likely to attach undue value to minute differences but those are the fault of the young; not of the tried and practiced intellect that knows where and how to find errors.

Even those who have given the better part of their lives to a particular pursuit have a strong love for species making. Wilson in his singularly painstaking work on the *Byssaceae* really annoys one by his doubts about species; and then his suspicion that all the *Hymenostroma* might be only varieties of *Weissia controversa* is too bad! Well may the philosophical student exclaim with you - "This is hair-splitting!" and refuse to admit genera which even if regarded as species shade away into each other for I have never yet seen the *Weissia controversa* with a trace of a peristome even by light transmitted through the operculum.

To return to the Lichens; what would the philosophical student say to the ordinal arrangement of Lichens proposed in Lindley's Veg. King[19]. Three orders are proposed – two bearing asci, of which I will only observe that more unphilosophical characters could not well be thought of; and that to separate the pulverulent or cellular from the gelatinous or cartilaginous genera is simple nonsense – the terms mean nothing, if we except "cellular". The third order the *Graphidaceae*, is characteristic as including the genera in which the "nucleus breaks up into naked spores" – it is clear that nothing could be more unphilosophical than such a character; but it I incorrect as a matter of fact if, as I understand, it means that the *Graphidaceae* have not spores contained in asci. All that I have examined have asci and although in some cases the ascus exquisitely thin and diaphanous yet the linear arrangement of the spores at once directs the eye to the delicate outline of the enveloping membrane. We must go back I suspect to some simple vegetable forms to find spores without the enveloping membrane.

Take the *Graphis scripta* sp I have lately analysed it. I send a tracing of my work. In the early stages of its growth the ascus (a) contains a mass of endochrome closely invested by its proper membrane. This investing membrane undergoes an 8-fold division, and each division or cell is converted into a spore. The separation into spores is effected by the closely investing membrane and its several partitions splitting into lamellae. The inner lamella becomes the spore coat and the outer the proper sac (b) of the spores. When the spores are ripe they break through their proper sac and through the upper end of the ascus. But the nucleus does not break up into naked spores; the *Graphidaceae* cannot therefore be separated from the *Collemaceae* and the *Parmeliaceae* on the ground that their spores are not contained in an ascus.

I send you tracings of all my work on the Lichens. I shall be much obliged if Mr Babington[20] would name them for me. It has occurred to me that it would be well to publish from time to time in the Annals of Natural History or some similar publication such novelties as would render your work more complete; and it seemed to me that drawings of the spores and asci with a slight sketch of sections of the apothecia would be favourably received by those who make Lichens a study. I would propose therefore to Mr Babington as soon as sufficient material could be collected to publish a paper on the Lichens of New Zealand accompanied by plates showing the size form and number of the sporidia the outline of the ascus and in some cases the apothecia. I am willing to incur some expense on this, provided you would like to see it done and Mr Babington would join in it. I you think anything could come of it will you bring the proposal under his notice and request him to inform me of his ideas on the subject and what would be a fair remuneration for each page of his descriptions and also what would be the probable cost of the plates and the printing. It would be

well also to know what would be the cost of 75 separate copies in addition to the usual 25 (I think) issued to contributors.

If the tracings I now send are of any value I should wish you to give them to Mr Babington with the Lichens accompanying them. I have ordered of my agents Smith Elder & Co[21] a set of "Lichenes Helvetici Exsiccati" of Schaerer. Would you please inform them where they are to be obtained. I am afraid they will fail to procure them.

I am giving you more trouble than I ought; but I need not tell you how happy I should be to have an opportunity of returning your kindness could I at any time be useful to you or to any of your friends.

Believe me
Dear Sir
Yours very faithfully
Charles Knight

Many thanks for recommending Wilson's work on Bryology[22].

7. DC 175: Folio 930: Auckland - 15 September 1857– to J.D. Hooker

My Dear Dr Hooker

I am greatly indebted to you for the trouble you have taken about the lichens and the drawings. I send you through Smith Elder & Co a collection of New Zealand *Graphideae* with sketches, together with drawings of some of Schaerer's plants – working drawings which may be of service. I am not practiced in colouring; indeed these drawings were nearly my first attempts in colour. You will see that I have added several species to your New Zealand Flora. I leave the whole to be used in any way you think best; if they can go to the Linnean Society I beg you would incur any expense to render them fit for general inspection or publication. I have noted what appears to me the differential characters of the species. I have read the Revd Mr Leighton's[23] paper on the *Graphidae* published in the Annals, and think he is too much inclined to multiply genera. At present I am strongly persuaded that the *Graphis* and *Opegrapha* ought to be thrown together excluding of course *Arthonia* etc.

You are I dare say right in your opinion of the difficulties of engaging in the pursuit of Natural History. But surely it is not necessary to spend a life as long as a Patriarch's before we dare to generalise. Dr Gray[24] in a paper published in the Annals drew attention to some of the long drawn specific descriptions of Cuvier. He instanced those of two closely allied species which took up nearly two pages of "orderly minuteness" without furnishing a single differential character for the two species. He contrasted this minute work with the greater labour of comprising within an enlightening word or two a whole circle of resemblances. The fact is that the most learned of us blunder on in a sort of mockery of scientific method when engaged in new fields of research. We overlook more than half; and what we do observe we fail to understand; till at length, like Dr Forbes[25] among the glaciers, we look back with shame on the false and spurious notions which ten to one we have exposed to the

criticism of some friends of larger experience. But who does not come out of his a wiser man, with judgement corrected, "Idols" knocked down, and a more distinct perception of the work to be done.

You say that every day the dogmatical upholders of the doctrine of special creation are going over to that of the origin of species by transmutation. Yes; and they will come back again; as all of us are apt to do when wandering or resting in the domain of opinion or dogmas! We shall never get this vexed question out of the domain of dogmas; like the species themselves, which approach to and recede from their normal state we shall everlastingly oscillate between the two extremes. I cling to the old dogma. The chief arguments in favour of transmutation is the vast number of species which link together the most dissimilar plants, and the extraordinary similitude which exists between the highest and lowest animals at certain stages of their existence. But where the species are so numerous the differences between those which are allied must necessarily be small. Between the given limits of locomotion, generation and assimilation there are no great distances; and it is in the nature of things that the resemblances should be great and that the species should glide into each other. If the doctrine of transmutation is one of Mr Darwin's "Idols" it must have beset him ever since his visit to the Galapagos. But surely the "Aborigines" of that group would furnish an argument against him; for there we have a few peculiar species of birds exposed to the same influences, living within the same narrow limits, yet exhibiting fixed although slight differences; whereas if the arguments on which the doctrine is based are good for anything, the species ought not to have been produced at all; or, if accidentally produced, should have returned to the original type; unless indeed it is maintained that the tendency of the "vis naturae" is to form new species and that these are most numerous where the disturbing causes are slightest. But "adaptation" is their creative force for the transmutation of species, - and yet every day facts are at variance with the theory. Mr Wallace states in his Travels on the Amazon[26] that no birds can have their bills more peculiarly formed than the ibis, the spoonbill and the heron, yet all pick up the same food from shallow water; and among fruit eating birds there are pigeons, parrots, toucans and chatterers feeding all together on the same tree.

I did not hear from you or from Dr Sinclair, whether Dr Sinclair will disburse for me any expense you may have incurred on my account; but to prevent any delay in repaying any obligation I may be under to you in money matters, I have enclosed a Bill of Exchange in your favour for £10; the proceeds of which will I trust meet the disbursements you may have made on my account, the balance, if any, can be paid to the Agents Smith Elder & Co, Cornhill. As to the Linnean Society[27], I have been so extravagant lately, that I have not the hardihood qualify myself as a life member. I must delay until next year the commutation for life, but I should like under your kind auspices to be admitted a fellow of the Society under the ordinary annual payment whatever that may be.

Believe me
Dear Dr Hooker
Yours very faithfully
Charles Knight

8. DC 175: Folio 932: Auckland - 3 January 1859– to J.D. Hooker

Dear Dr Hooker,

The Austrian Exploring Frigate "*Novara*"[28] is lying in the harbour and has put us in a hubbub with science and salutes. We were prepared for something "fermanissive". Dr Scherzer[29], the ethnologist will, I believe write the Journal of the Expedition. He has travelled in North and Central America and published his travels in both German and English. Commodore Urbair[30] is principally engaged on Magnetic observations. He is a painstaking observer. He has an ingenious means of determining the height of waves. He finds the distance between two waves and the angle with the horizon which the ship makes in ascending and descending them, and from these data computes their height. The angle made by the ship is determined by a graduated tube of glass bent into a semicircular arc, the plane of which is placed vertically in the direction of the ship's length. The position of the spirit bubble (α) shows the angle. [Knight has included a small drawing]. The means are perhaps somewhat rude, but would give on a number of observations a fair average height of the waves. The error would be on the side of excess, since the angle measured is a tangent to a curve, taken where the angle with the horizon is greatest. The maximum height of the waves in a storm off the Cape of Good Hope was only 34 feet, the ? 28 ft. There are botanical collectors on board. They made a large collection on The Northern Island. [---]

The arrival of a staff of learned men, has given an impetus to ones scientific pursuits. I have shewn our New Zealand Forest to them in all its glory. After a two hour's ride we came at once upon the Kauri Forest – Gigantic Kauries [sic] – 9 ft in diameter of great height and apparently the same girth where the branches were given off, which you know is at a great height. I never myself saw anything more interesting in New Zealand – the palm and the tree ferns with Supple Jack and *Astelia* brought to one's recollection the sketch of a Brazilian forest in Lindley's Vegetable Kingdom.

You and Lyell[31] have published the Darwin and Wallacean hypothesis of Creation! Surely it will never do, except so far as it explains temporary variations from the typical form. I recollect a conversation I had years ago in New York with an intelligent American. I had noticed how healthy and strong butcher's boys were and supposed the trade was a healthy one. He ridiculed the idea; he contended that it was most unhealthy; that we found only robust butcher boys because the less hardy ones had been weeded out – killed off in the early days of their apprenticeship; that only the strong could outlive such an unhealthy apprenticeship. If butchers, he explained, would intermarry in the families of butchers only, what a race of extraordinary men there would be. Now this is the Darwinian notion complete. Michelet[32] asserts that Shakespeare was a journeyman butcher and he gives as his reason for the preeminence of butchers that they consumed more meat than other men. But Mitchelet had never heard of [missing - ?Darwin].

The great novelty of the new hypothesis is the happy expression that nature selects the varieties. But do not these varieties return to the typical form? It seems to me that the probability is altogether in favor [sic] of the stability of species maintained by a beneficial arrangement exactly as in the stellar world, every eccentricity fluctuating within narrow limits. The combinations of mental and physical

endowments are most numerous and complicated, so that we cannot reason upon them with any safety. Take Darwin's own example of the dog, the rabbit and the hare. The slow but sagacious beagle with his marvellous powers of scent would fatten where the greyhound starved.

It is unphilosophical to assume that nature is every day creating species; she necessarily favors [sic] for a time those varieties which have a more powerful or finer organization – so long in fact as those organizations are better adapted for the existing state of things. But the "state of things" is always changing; they may take ages to run their cycle. We do not know that more than this happens. We do not know that Nature goes on ad infinitum in one direction – there is a limit somewhere to her excess, and when she has reached it, the tendency is to return to the normal state, because new antagonistic powers spring up which favor [sic] other developments. Disease and droughts suddenly sweep away immense numbers of animals. Darwin says in La Plata millions of cattle may perish from drought and suddenly the whole country swarms with mice. Will Darwin be bold enough to say that the "head" of cattle was altered in any appreciable extent by the drought; certainly the larger animals – those which were obtaining the mastery – would not be those which nature would select for the future stock; on the contrary the small and wiry individuals would be here favourites. And when, in the lapse of a very moderate number of years the abundance of pasture had favored [sic] the growth of the degraded race and reproduced the finer animals, nature would once more have returned to the normal state.

Darwin is always taking us to Islands for the theatre of changes. It is his misfortune to have visited the Galapagos. What may be true of a small island may be extravagantly false of the whole creation. Nature does not work out her compensations in so small a field, her plans are contrived for a larger domain. On islands species are often entirely destroyed. But this belongs to a different question, it is the mutation, not the destruction of a species we are thinking about.

If the hypothesis of Darwin is good for anything we must use it universally. The spirit of it is, that nature is ever exalting the races. We can stop nowhere. What an Alvarado leap from the Chimpanzee to Man. We may exclaim with the valorous Captain Diaz that the leap is impossible!

Mr Wallace is a runagate. I quoted him against Darwin little dreaming he was one of those lofty systematists "qui ont creé l'univers avec leur plume".

How little has the breeder of stock done for the production and maintenance of varieties. He never succeeds in passing, - although he readily reaches certain limits. I know it may be replied to [unreadable]...limited to a few centuries – she has had unknown ages to effect her changes. But on the other hand we must not forget that the earlier departures from what we regard the typical form are easily obtained; and that the further we attempt to push the changes the more difficulties we encounter, until at length we arrive at a point which is only maintained by the most careful attention to the conditions under which we arrived at it. Showing there is a certain normal state, and that the further we depart from it the stronger the tendency to return to it. "All experience shews" to use the language of Lyell himself "that the succession of living things appears to have been continued not by the transmutation of species but by the introduction into the earth from time to time of new plants and animals. But this you

will say is a dogma – True. Everything around us is a mystery; and where is the "euphrasy and rue" with which to purge our sight.

This new hypothesis is the old theory of Lamarck and is another instance of that vicious logic which assumes facts and then invents an hypothesis. The burden of the proof is upon Darwin and Wallace to shew that in any one single instance a variety has been converted into a species. When this has been shewn we may proceed to account for it and shew that all species are formed on the principle of selection.

I am working industriously at the Lichens. The General Assembly has made my office a patent one; so that I can devote all my own time to favourite pursuits without anxiety for the future. Babington I suspect has too many species arranged under *Sticta.* Nothing satisfactory can be done with them if we reject the differences in the spores. In many of the *Sticta* the spores are subject to a singular variation in the number of cells. I wish I could have a month at the *Stictae* in the Hookerian Museum; I could get up a useful monograph on them. But what can one do at the antipodes.

Many thanks for the Indian mosses[33]. I have not examined them for the purposes of study, as this will be more satisfactorily done when Mitten's papers are published. My great wish at present is to obtain Lichens from South and North America. If an opportunity of purchasing them, for me should occur would you be so good as to do so; or inform Smith and Elder where to obtain them. I wish it were in my power to assist you in anything.

Dr Sinclair is at Nelson – Monro and he will botanize on the mountains there and I am sure they will make discoveries. Sinclair has nothing else to do now. The Government here has promised me again and again a long holiday; and I have never yet been able to get away from this District since we had Representative Institutions.

I have enclosed a paper on the Bitentaculate Slug of New Zealand[34]. Dr Gray will be interested in it; I amused myself with an examination and dissection of the mollusk [sic] one afternoon; having by chance learned that Sinclair had found a specimen and was about to send it to Dr Gray. - I did it to surprise him; and now he suggests it might be useful to the Members of the Linnean. If you think I shall not be making a "fool" of myself, perhaps you will be good enough to let it go on to the Secretary. I have no time to copy the drawings on to a single sheet of paper – you have them on mere slips.

Yours very truly
Charles Knight

9. DC 175: Folio 934: Auckland - 20 January 1860– to J.D. Hooker

Dear Doctor Hooker,

It is now nearly four years since Mr Archer's[35] letter on the subject of compensation being made you for the heavy expenses you incurred on the New Zealand Flora, was laid on the Table of the House of Representatives, - no one took an interest in the matter; - Dr Munro [sic] was not a member of the House; - and nothing was done - in all that time I was myself being persecuted by a party in the House, I was a friend of Sir George Grey and not to be endured. Mr Archer's letter I had not seen; I had not even heard of it until a few weeks since; as soon as I heard of it I called attention to the fact that nothing had yet been done about the letter; and that on the ground of mere courtesy some notice should be taken of it.

I am now in a different position; I have outlived the spite of a discontented faction; the General Assembly has passed a law making the office of Auditor a patent one, and your claim would not now suffer by my taking an active interest in it. I have this moment seen Mr Stafford, our "prime minister" and he promises to place a sum of £150 on the estimates for next year. With this I am content, because through Dr Munro [sic] and others an amendment can be introduced increasing the amount to something more nearly equivalent to your extra expenses on account of the Flora. I have debated with myself whether I ought to write to you on this matter. Nothing is more uncertain than the fate of a money vote for "extraordinary services"; but I do in this case as I would like to be done by; - it is at least satisfactory that the present ministry recognize your services, and understand how much we are indebted to you. Sinclair shewed me your letter in which you allude to a popular work on the Flora of New Zealand. I did not tell him what I am doing with the Government; but I discouraged any application to the Government based on new labours to be undertaken by you. The old score should be cleared off, before we begin a new one.

My own ideas about the new publication are, - that you should prepare a work in English and should supply one complete set of dried plants for the colony for £300. That you should offer to prepare as many more sets as might be desired not exceeding the number of provinces in N.Z. for each of which twelve guineas or whatever you think a proper sum should be given; and I would, con amore, assist in collecting such plants as you might need to complete the sets.

Mr Archer's letter is now before me; it is, what you termed in Thomson's case, a little blathery on the advantages of science - "Science!" as he writes with an apostrophe, "is the grand distinction between savages and civilized beings" but still it is a warm and capital letter.

The General Assembly meet at Wellington in April next; it will be my duty to be there; and I hope by June to inform you that the General Assembly is alive to your merits and to Mr Archer's apostrophe.

Many thanks for the North American Mosses. I occasionally work at the "cryps" - but at present I am analyzing the soils of this part of N.Z.

Dr Sinclair proceeds in a day or two to Wellington. We passed two days at the coal fields examining the locality. The coal is no excellent quality; but, unfortunately, on exposure to the air, it cracks and splits into minute pieces, till it becomes almost dust. The vein is thick and homogeneous and the mineral would be most valuable but for the great drawback I have alluded to.

The Colony is advancing steadily; our ordinary revenue during the year ended 30th June last was £175.310 and our Territorial Revenue £209.497. A great number of Immigrants have arrived during the last few months; they have most of them gone into the country, and yet the price of labor [sic] continues high.

With many wishes for your health and happiness and kind regards to Sir William.

Believe me
Dear Doctor Hooker
Yours very truly
Charles Knight

10. DC 175: Folio 936: Auckland - 28 June 1860 – to J.D. Hooker

Dear Dr Hooker,

The Mail is closing but I cannot let it leave without thanking you most sincerely for the trouble you have taken about the publication. I see you have rebaptised me and given me the christian name of "William" instead of Charles – Is it too late to correct the error?

Sinclair is well – as well as a poor fellow can be who has just completed Darwin's Species – he looked dull & stupid and never left his house for a week after.

Colonel Smythe[36] & he have at last got away to the Fiji Islands. The war here prevented a Man of War being placed at his disposal. He went in a small schooner. They seemed pleased with New Zealand – We had a pleasant picnic over at Motu Tapu – The Smythes, the Governor's lady, Commodore Laing etc. The meeting of our General Assembly is put forward to the end of July.

Believe me
Very truly yours
Charles Knight

11. DC 175: Folio 937: Auckland - 29 October 1860 – to J.D. Hooker

Dr Doctor Hooker,

You will learn that although the ministry felt it their duty at a time of extraordinary expenditure on the Native War[37] to place on the Estimates, as an acknowledgement of your services, only the sum of £100; yet the House of Representatives, on the motion of Dr Munro, prayed the Government to send down an amended Estimate for £200. This sum has accordingly been voted. Until the Act of Appropriation for the year 1860-1861 has passed, the grant cannot be issued. - The Act will receive the confirmation of the Governor in about a week, when I suppose the Government will communicate with you on the subject. It is principally owing to Dr Munro's exertions that the larger grant was obtained. I am sure you will concur with us that under the present circumstances of the colony the grant, as an acknowledgement of your services, is satisfactory. I am quite certain that nothing but the strong impression of the obligations the Colony is under to you for your Flora could have carried the vote at a time of such general depression and trouble.

Sinclair is away in the bush. He may return before the Mail leaves, when he will no doubt write. He is to the North of Auckland. The South would not at present be free of risk as the Natives near the Waikato are turbulent and looking out for a "casus belli", to justify their attempt to scoop off the cattle and sheep of the outsettlers. A few days since a native was found dead in the bush near the Waikato, a musket ball had entered near the shoulder in front and lodged in the spine near the loins. The Natives, except the leading chiefs, are exceedingly violent. And insist that their countryman has been murdered by one of us. It is reported that the Maori Waikato King is about to investigate the matter – the young men being offended with their chiefs for agreeing with the finding of the Inquest, that there is no evidence to shew by whom the native was shot. The natives suspect foul play. It is a serious affair; no one yet knows what course the natives will take – the general fear is that they will commit some act of bloodshed and violence. The safety of Auckland may not be seriously jeopardized; but a war with the Waikato natives will cause sad losses and put a stop to agricultural and productive industry. At home they are making the mistake of sending military protection in dribblets. New Zealand must be occupied by a large military force; it should be a part of the plans of the Home Government to concentrate their forces here, where they would be ready for any emergency in these seas. In a few years we shall outnumber the natives; our young people are fond of volunteering.

Believe me
Yours very truly
Charles Knight

12. DC 175: Folio 938: Auckland - 6 May 1861 – to J.D. Hooker

My dear Doctor Hooker,

Mine is a sad duty to day. Our old and dear friend Dr Sinclair was drowned on the 26th of last month when attempting to cross the river Rangitata in the Middle Island. He had accompanied a Mr Haast[38] – (a countryman and friend of Dr Hochstetter) - to explore the sources of that river, and had completed the exploration of the western branch up to the base of Mount Cook. He had collected new plants, none of which have been sent up here, but I understand that Mr Haast will send a set to your address. I had accompanied our friend as far south as Nelson, and never knew him so cheery and companionable. He made arrangements there with Mr Haast to explore together the country round the base of Mount Cook and to ascend that mountain together; and he entertained great hopes of adding to your knowledge of the botany of our Southern Alps. I went further south to Dunedin where I stayed a month and on returning just missed seeing Dr Sinclair as he was starting from Christchurch for Mount Cook. His niece has lately received a letter written a few days before his death. In which he describes the Glaciers of the Southern Alps, and the risk the party was exposed to from the rupture of a field of ice. I do not know how far Dr Sinclair would have regarded his communication as belonging to the store of Mr Haast, the geologist of the party, and I have not therefore asked Miss Sinclair for permission to copy it. When Haast publishes, which he will do in a few weeks, I will take care that you get a copy of his paper.

I send you a slip from one of our local papers giving the details of the accident. I would have given you a longer account from Mr Haast's communication, had I not left myself too short a time to do this. I may however add in explanation of the length of time that elapsed before the body was found that Mr Haast, on the return of Stringer to the Camp, proceeded with every possible speed down the river, arriving at the spot where Dr Sinclair had crossed over to the island, he found the river too deep and rapid to be forded. He at once set up a lofty pole with a letter fixed to it, stating what had happened. He then searched lower down the stream, looking out anxiously for the body of his lost companion, if by chance it had been left on one of the spits of the river. Very soon the banks became impracticable, and he was compelled to strike inland, and was at length stopped by a swampy creek (late in the evening) where he had to camp. Soon after he saw an alarm fire some distance off on the opposite side of the river. The next morning he started by daylight, and when he again reached the river it was still impossible for persons on foot to cross it. At about 10 A.M. he was overtaken by a party of three horsemen. They stated that the stray horse had arrived at the station about dusk and that they had immediately lighted a large fire for the guidance of the dismounted horseman, whom they feared had met with an accident. That in the morning they took up the track of the horse; crossed the ford, and found Mr Haast's note; but they had seen no signs of Dr Sinclair. The party being now all mounted crossed the river about three miles below the place where the accident occurred; and at sun set found the body about 300 yards below the ford which Dr Sinclair endeavoured to cross. The body was lying on a spit of land; he head resting upon the right arm and the left arm [two words missing] down the body. The face was much bruised. The body was lying <u>nearly</u> dry. I do not myself think it probable that life was not entirely extinct, when it was stranded. Three hundred yards was a long distance to be in the water, and the bruises on the face shew that the head

had been frequently brought in contact with the stones of the bed of the river. The body was borne to a neighbouring spot; where he himself had admired with Mr Haast the extreme beauty of the scenery around. His name and untimely end will be long remembered in the district where he had so well laboured to extend our knowledge of its resources and its Natural History; and arrangements will, I believe, be made by his relatives, by which, when the neighbourhood becomes more populated, a church may some day be built on the spot near his place of burial.

I am thinking seriously of undertaking the Fungi. I will make dissections of the more perishable species and send you the drawings. I enclose drawings made two or three years since. Would Mr Berkeley[39] think it necessary to go into more detail. The *Sphaeria cosspata* is remarkable for the horizontal disk and *[line missing]*

I notice in the review of Mr Berkeley's Outlines of British Fungology in the Natural History Review of January 1861 page 8 that the Reviewer states in respect of spiral vessels that "it is true that all the species of *Trichiae* contain threads all of which bear spiral markings; but the nature of these markings is still a subject of controversy."

That these threads are true spiral cells I cannot doubt, - I should, three or four years ago, have drawn your attention to the observations I had made on the subject, had I not been under the impression that the controversy had ceased and the spiral nature of these cells admitted.

I send you now tracing of a sketch I made several years ago. You will see there are three distinct continuous spirals – not "asperities" - nor what the reviewer terms "arcuate elevation of the cell wall following a spiral direction" That there may be no doubt of the correctness of the observation I enclose for Mr Berkeley a few specimens of a *Trichia* collected here. I have had them some time and they may not be so well adapted for observation as when in a living state. With a good microscope and a 1/5th object glass the spirals are brought out quite distinct; but an 1/8th may be necessary to enable one to count the number of the spirals. Previous to observation the specimens should be placed for a few hours in cold water, and then in boiling water. A shallow eye glass would be best to use with the 1/5th; otherwise from the age of the specimen, the crossing of the threads will give the appearance of asperities. Even admitting these cells to be studded with asperities, the size of the spores is at least five times too great to admit of there being a spore attached to each asperity.

On looking over, yesterday, some plants collected by Dr Sinclair at Nelson a year before his last trip, I find two remarkable plants which I think are new and may possibly belong to a new genus. I send rough sketches of my dissections. All the ray florets are incomplete and truncate, sometimes ligulate. The relative sizes of the florets of the two plants is shewn in the sketches. The following seem to be the characters of the genus. [Capitulum multiflorum discoideum heterogammo; Fl. Marginales ♀ (truncata 1-3 (?) seriales, corolla angustissima incompleta nunc ligulata) Fl. disci [sign for hermaphrodite]. Recepotaculum angustissimum. Papus 1 = scriatus, setis glaberrimis v. scabriusculis, flosculis longioribus. Involucri squamae lineares 1=scriatae, erecto disco equilongae v. longiores] send also a Leptinella (collecxted by Dr Sinclair the petiole is amplexicaul, the leaves not recurved and the plants dioecious) an *[--- line missing]*

The Stafford ministry is out, and Mantell[40], who has been returned to the House of Representatives as a Member for one of our southern constituencies of the Middle Island is the Minister for Native Affairs. Your old friend Colenso[41] is also in the House of Representatives. He is a ready speaker which Mantell is not; and he is companionable I learn, and Mantell here too, is not. Mantell has lately been talking to me about publishing our Flora in English. But I do not think he has any practicable notions on the subject. The present Ministry will do nothing. But if Stafford should get in again, while Sir George Grey is in New Zealand (Sir George has not yet arrived, we are daily expecting him) I believe we should then be able to manage it. I think nothing can be done at present; and perhaps you are in no hurry about it. Will you tell what the expense will be to get out a moderate edition? Reeve[42], I fancy, is a dear man. You once said Reeve's would do it at his own risk; if the Colony would defray the authorship. If I once knew what a probable expense would be; I would get an estimate of the probable number which would immediately be taken up here. But if [?Reeve] would publish at his own expense, I think we could almost immediately set about getting a grant to cover your claims as author. We should be sure of Sir George Grey's hearty cooperation, if we have only to pay for authorship.

I have not seen the Hong Kong Flora[43] but that I understand is the model you prefer. Supposing that work is taken as a model and that the proposed Flora includes the Ferns and Mosses what would be the expense of publication? The Mosses I think out [sic] to be included – I find people fond of collecting Ferns and Mosses, but very few take much interest in Dictotyledonous & Monocotyledonous plants. Next as to your own labours what would you think a fair remuneration. I think it should be so much for each species described – it suits my acquired notions of business to bring everything, I can, within a numerical calculation! Besides we might determine to have the Hepaticae & the Lichens and this probably might put you to some extra expense for it is out of the question that Babington's descriptions of Lichens can be taken; they are behind the times. Nylander[44] is capital – except with his *Stictae* the division of that genus into *Sticta, Stictina* & *Ricasolia* is untenable. Darwin's work, if it is to do any good, ought to support the School of Hooker in putting down the hair splitters – I think Darwin's theory may be true – that part of it that maintains all living things spring from the lowest form of life – the primordial cell! For that, if the dogma is good for anything, is what we come to; and it seems so "reasonable" I shall call it a dogma no more!

Dear Sinclair was ashamed of me for not admitting it at once – But I excused myself on the plea that it was monstrous to throw off "at once" all one's habitual notions and take up with a dogma – a notion, that all acknowledge can scarcely be supported by a single proof. Strange if the truth should be in the interval between "Design" & "Chance" That living things should have sprung, not by Design, nor yet by "Chance", but from "the Nature of Things" - that like cannot produce the like Exactly! that there is always a variation in each offspring and this variation is something so great that a new variety becomes established – never care by what means, and since the like produce the like nearly! the offspring of the new variety is more like its parents than it is like the species from which its parents sprung. This I think is the theory? What used in careless language to be called "Chance" is now "in the Nature of Things". The Mail is closing.

Believe me
Yours very truly
Charles Knight

13. DC 175: Folio 941: Auckland - 7 August 1861 – to J.D. Hooker

My dear Dr Hooker,

We are flinging up our Caps and shouting for joy at the welcome intelligence received by this Mail of Sir George Grey's appointment to the Government of this colony[45]. You are right in your general views – that the uncivilized races must give way to the civilized; but you could not have been prepared for the spirited stand made by the Maories – The Anglo Saxon race have here met their equals on the field – there is no question about the prowess of the Maories now and their intelligence. They have abandoned their old plan of defences – they build no more pas for defence – they now dig rifle pits in defensible positions; and they cannot be dislodged except at great sacrifice of our men. If we sap up to them they occupy their time by extending their rifle pits or preparing fresh pits so that really we might sap from one end of the Island to the other, at least so long as they can keep to the forest and that they can retain free communication with the tribes in their area. We have lost as many men as they have. Indeed if they had not on one occasion been surprised & on another so foolhardy as to attack one of our redoubts their losses would have been unaccountably small. They declare that shells and Armstrong Guns are contemptible things – they care nothing for them in their rifle pits – but the rifle they are afraid of – and I believe they fear more the Militia and volunteers than they do the regulars – On every occasion the Militia have been far more than a match for them and have behaved with great gallantry & judgement; never flinging away a chance or a life and always victorious when the natives would face them – With the regulars many discreditable affairs have happened, so discreditable that their very enormity shuts out any belief on them at home. *[--- a page or pages is missing here]*

...hypothecium of the ripe fruit and the distant paraphyses. In the *Sp. herbarum*, the paraphyses are very indistinct – indeed it seems to me that the cellular structure of the unripe fruit is broken up or compressed by the growing thecae and that there are no true paraphyses present. I observe that I have coloured the spores of the lower ascus badly; they should have been of a bright umber.

When preparing the paper on the *Verrucariae* I had thought of asking Mitten's assistance to work it into shape for publication; but when I sent it I was not quite sure whether I would trouble you with these things; and I did not know what would be a fair sum to offer him; but I see now how very good natured you are – So I sent the paper with the specimens to the Linnean thinking it would be a useful addition to the Museum. If you think they are worth publishing, and if Mitten would prepare a paper, I should like him to do so on what you might consider reasonable terms.

A long time since Mr Mitten volunteered to send me a set of British Mosses. I did not like his <u>giving</u> them to me; so in reply I offered to take them on the usual terms. He sent me about 80 specimens with a promise to send the remainder; and I have heard no more from him. Those he has sent are of little use unless completed. I

should wish to get the remainder on the usual terms; but I cannot tell whether Mitten dislikes selling them, as he has never alluded to the price. It may be he has found no time for looking them out.

You will learn from the public papers that the natives of Taranaki have made peace on our own terms. We do not yet know how it was managed. McLean[46] had an interview with the rebels and presto the native force vanished in a day. There never was anything so unexpected. Yet their position was truly formidable and the defences in their rear most extensive. They could not have been driven away with a less loss on our side than 100 men. Some good will no doubt come out of the late disturbances; but who is to repair the losses of the poor settlers – they have literally lost everything in a quarrel which they neither provoked, nor were allowed to interfere in in a way which no doubt would have been far more effective than the scientific means adopted by the Military. The natives declare they lost no men by the cannon & shells. The rifle is the weapon they stand in awe of, and there is no doubt he independent firing of the volunteers and militiamen is more effective than the regular.

Believe me
Dear Dr Hooker
Yours very truly
Charles Knight

14. DC 175: Folio 943: Auckland - 4 November 1861 – to J.D. Hooker

My Dear Dr Hooker,

I have done nothing lately with the Crypts. A change of Ministry, a new Governor, a disaffected native population, bring abundance of work. Scientific pursuits are followed with more difficulty every day – I miss the stimulus of poor Sinclair's companionship. I have however been engaged in establishing meteorological stations throughout the Northern and Southern Islands. Ten stations are now established. We have the usual supply of Barometers, Wet & Dry Bulb Spirit and mercurial thermometers. The Government begged me to take the whole affair under my direction and a troublesome business I find it, writing instructions for the use of such a variety of instruments placed in charge of people who know little about them I fear. By Christmas we shall [have] stations in full operation from Foveaux Straits to Mangonui to the North. We ought to have ozonometers to complete our set of instruments. Is there any work on ozone with reference to meteorology? I send a few plants from Dr Sinclair's old collections; collected principally at Nelson about two or three years ago. I have lately taken up the Phanerogams and do not meet any particular difficulty in naming them. I am going through Dr Sinclair's collections. He does not appear to have worked them up at all. The first step is the great difficulty. I make it a rule to look at no plates, until I have, as I believe, made out the plant. Lindley's artificial analysis at the end of his Vegetable Kingdom is extremely simple and satisfactory. I send a new *Veronica* which a friend of mine "gave me as a plant from the Kaikora [sic] mountains of the Middle Island". Also a specimen of a new *Veronica*, just received from Travers. I have told him to send you duplicates. I at first sight, thought it might be the *V. Lavaudiana*, (which I have not seen) but that is a diminutive plant, this, grows 10 ft high- Colenso has been here and has promised me

duplicates of his plants – His society was avoided, but he is an exception to the General rule that a prophet has no honor [sic] in his own country. He is the blossom, bud and flower of the town of Napier; represents it in the General Assembly; is their Provincial Treasurer, with a salary of £300 per annum-

As I am pressed for time and may forget to answer your inquiries if I put them off to the fag end of my letter, I may state at once that Smith, Elder & Co, of Cornhill, will take charge of anything however small you may wish to send me. As to visiting England, I have no hopes of being able to accomplish it within the next four or five years. If Sinclair had lived, I would have tried hard to accompany him in his intended visit to the Great Exhibition; I have a young family growing up, and latterly my wife has made it a rule to add to the number yearly.

Oh no, Dr Hooker! no judicial extirpation of the natives. Thank heaven we have now a man for a Governor; quiet, far-seeing, confident & self reliant, of sleepless energy, one whose activity of body and mind the natives fear – depend on it, we shall have no such lazy method of solving the native question. But it is a difficult game the Governor has to play – The natives by bad management have become antagonistic. But they know well that Sir George Grey is their true friend – the rebels, will shew him no honor [sic] as the Queen's Representative, they are essentially now a disloyal people. The Upper Waikatos are sulking; they seem determined to sit apart – Grey will ignore them as much as possible. The friendly natives will receive every encouragement and assistance from the Government. Their activity will be stimulated; their lands in future will be made more profitable to them; and as far as they can use them our institutions will be introduced among them. The upper Waikatoes will, I suppose, be treated as a tribe of vagabonds, from whom we must take pledges for their quiet conduct. But no judicial extirpation. The Upper Waikatos will be forced through jealousy, envy and love of lucre to come in as friendly natives and loyal subjects. If they are troublesome, I have no doubt the Governor would overrun them with natives who would at once crowd to his standard, but what is called amalgamation is out of the question; unless property were divide by Crown Grants into family portions. I dare say then a native girl with good broad acres might make an eligible match with a European.

I have by this mail received (at length) the Linnean Transactions with the papers on the Lichens and on the Bitentaculate Slug. The slug is my "pet". I see that Dr Gray is pleased with the paper. The printers have made a mess of the references to the plates. Nos 6. 7. 8. 11. 12 & 15 are drawings of dissections of the common black slug of the Northern Island. This black slug us I believe as interesting as the bitentaculate snail. You would really do me a great kindness if you could get these errors noted in the next publication as they expose me to criticisms. I am much pleased with the plates of the lichens. I see they have included my paper & dissections of the *Verrucariae* with Mitten's & my paper on the *Opegrapha* etc. Mitten has misunderstood the measurements and has in every instance stated them "from" and "to" whereas the word "from" should be "length" and "to" should be "breadth" This mistake has made the measurements almost useless, and one half of them false. The fact is that the variation in the length and breadth of the spores is very trifling. Dr Nylander adopts the plan of giving the maximum & minimum lengths with wide intervals, and I think unadvisedly for if the spores only are measured which are in situ in the upper part of the ascus the variation will be found slight and not important.

Fancy how my love for exact measurement is outraged by these cruel errors. I, who have gone so far as to support Sir John Herschel[47] in his really not very extravagant recommendation to the Imperial Government, that a vessel should be employed to visit periodically the various colonies in these seas and determine carefully & by standard instruments on board the integrity of those deposited at each seat of Government. It might have been a little too much in Sir John! But then how rare and beautiful it is to see a philosopher so in love with truth. Like Dr Gray, who really could not see how my bitentaculate slug could be quite naked when I had found these calcareous granules in the roof of its pulmonary sac!

I have been much inclined to abuse Mitten ever since; I have been spying out his weak points; - his hair splitting propensities and his quiet digs at Wilson, whom I like – I know very well Dr Hooker, that Sir John Herschel in the Scientific Manual declared that a naval officer had no pretension to be called a meteorologist who did not register every odd hour in the 24 hours; and therefore you will not side with so unreasonable a person! Many thanks nevertheless to you for your taking such an interest, in my first attempt.

Touching the *Cyperaceae* & *Gramineae* of the Middle Island, I have lately made overtures to my friend Major Richardson, the Superintendent of the Province of Otago, to accompany Dr Hector[48] to the higher ranges on his exploration of the Geology of the Province. The Provincial Council at Dunedin has voted £5000 for the Geological Survey & Murchison has recommended Dr Hector as leader of the party. Richardson has promised me timely notice of Dr Hector's arrival.

Among Dr Sinclair's Nelson plants is a new species of *Celmisia*, allied to *C. gracilenta* with sessile head of flowers rough elongated achenia the leaves with close pressed light brown tomentum and a well defined midrib at the back; the upper surface concave. Every specimen has the capitulum buried in the leaves at the extremity of the plant. Like the *C. gracilenta* the style of the mature flowers of the disk have long acuminate branches.

No 4 seems to be your *Stellaria gracilenta*; if so, I do not find the margins of the leaves of that plant "ad costam recurvas". Tomorrow morning I am off to the bush for a fortnight's holiday.

Believe me
Dear Dr Hooker
Yours very truly
Charles Knight

15. DC 175: Folio 945: Auckland - 6 May 1862 – to J.D. Hooker

My Dear Dr Hooker,

I have this day received your kind and interesting letter of December last. An accident which befell the Mail Steamer delayed the December mail. I am obliged for the trouble you have taken in your attempts to obtain a set of British Mosses for me. There is no dependence to be placed in Mitten. I see that Mr Wilson advertises them for sale. As I am desirous of getting a set, I have written to the Agents, Messrs Smith, Elder & Co requesting them to forward any collection of plants that Mr Wilson of Warrington may send to my address, and to discharge his claim for it. Would it now be troubling you too much to explain my wants to Mr Wilson, that I need full materials for working on, and that I am willing to pay an extra rate per hundred for a choice collection. Of course if Mitten has already supplied them, it will be unnecessary to trouble Wilson.

I am thinking of getting together collections of Crypts, from as many parts of the world as I can, without extraordinary expense. At the present moment I should not be justified in incurring the expense; but if I obtain an addition of £100 per annum to my salary at the next meeting of the General Assembly – and I find that the ministry have me down for that additional salary – I can expend an extra £20 or £30 per annum in making additions to my collections.

Now that I have your ultimatum, I will propose to the several provincial Governments of New Zealand that a vote should be taken in each of the Councils for a grant of about £80 to defray the cost of a new Flora of N.Z. to be got up in the style of Bentham's Flora Hong Kongensis, including an Introduction to Botany and analytic keys of Genera and Species. Or, if I think it best I will make a proposal to the General Government for a grant of £450. This would in fact be nearly the same thing as the Provincial plan; but it would have this advantage – that it would distribute the expense proportionally between the provinces. The General Assembly meets in June next. I am ordered to proceed there early in that month. Mantell, Monro, & Colenso have seats in the House. Monro is the Speaker. Altogether we have many friends who will support us. Still I am not sanguine as to success. A trifling contre-temps may upset the best devised scheme when it is brought under the consideration of a representative body, such as we have in the New Zealand Assembly. I shall take council with Mantell, but keep well in the background myself. Mr Stafford is in opposition, but if he is not greatly tormented with the tooth ache he will give his earnest support. Still I fear we may not succeed this session; the Assembly will be called upon for extraordinary votes to carry out Sir George Grey's native policy. The Governor asks for £50,000 per annum for Native Purposes – of which sum the Home Government is to supply a moiety.

The elected Superintendent of the Province of Otago – Major Richardson[49] – writes me by the last mail that Dr Hector had arrived, and that everyone was pleased with him. He has come says the Major armed with instruments sufficient to test every thing in the heavens above and the earth beneath. He has declared his doubts of the Otago Coals being of the true kind. He is first to make a preliminary survey with a view to some fixed plan of operations; but will not commence in earnest for some

weeks yet. I am to be informed of his movements with a view to joining him if I think fit.

"Ceylon" Layard[50], the Private Secretary pro tem, returns almost immediately to the Cape. He and his wife accompanied Grey from the Cape. Neither of them are exactly cut out for their positions here – Sir George is said to have complained that while his own friends are scarcely welcome at Govt House, he finds every room filled with people unknown to him. And Mrs Layard on here part openly declares that the house is overrun with chits of girls, pets of Sir George; that her own bed room is not free from their intrusion. Perhaps a lady in her position has not fair play – cliques of ladies club together, and a wonderful amount of ability finery runs to waste.

Layard will be pleased to get back to the Cape and to his dear friends the McCleans. He is a most amiable person; but not cut out for a mere Priv. Sec.

Believe me
Dear Dr Hooker
Yours very truly
Charles Knight

16. DC 175: Folio 946: Wellington - 11 September 1862 – to J.D. Hooker

My Dear Dr Hooker,

Last evening the House of Representatives passed a Resolution "that an address be presented to the Governor requesting him to recommend to the House to make provision to the extent of £500 for the expenses attending the publication of a Manual of New Zealand Botany". As the Resolution alluded to is equivalent to a grant of £500, I am now writing to you as if a formal vote had been come to. As soon as the vote is taken, the Colonial Secretary will communicate with you on the subject. The amount for which you offered to write the Flora was £300; exclusive of £150 for 100 copies of the work on the day of publication – The work was not to include a description of the Algae. As I was anxious that it should include those plants, I proposed that an extra £100 should be taken for the purpose. Dr Munro [sic] seemed to think and extra £50 would do and the resolution of the House was accordingly taken for £500 only. I have since – that is this morning- obtained a personal guarantee from all the Members present except one to make up the sum to £550 – Having protected myself as well as you with this guarantee I now hope that you will for £500 from the Government and £50 from private sources undertake the Flora, including the Algae; you taking upon yourself to make what arrangements you please with the publishers, who probably may require more than £150 for 100 copies of the work. At the same time ... [several words indecipherable] I shall recommend the Government on completion of the book to take an additional vote for £100 instead of £50 at the next sitting – making the total payment to you £600 – which I have not the least doubt the Government will carry. In fact I have taken the guarantee for £100 not o9n the understanding that though their votes are pledged for £100, their own pockets are liable for only £50. I hope this is clear to you.

I may mention that I have always understood that you would adopt as the "Model" the Flora of Hongkong by Bentham and that you would give an introduction to Botany, and keys to Orders, Genera and Species as he has done.

I enclose a copy of the Guarantee.

It would add greatly to the value of your labours if you kindly undertake to furnish a manuscript list of Colenso's plants with his numbers for the purpose of identification. The last is a private suggestion and is in no way part of your undertaking; but you will recollect that I once purposed you should supply with the book a suite of specimens from your Museum; and you replied that you had not the material. The proposed list is now the only means by which we can obtain an identification of the species through Mr Colenso's collections. I have no doubt that the Government will instruct you that the whole of the money is payable to you on receipt of the 100 copies – and that no communication will be made to the publishers on the subject –

Wishing you quickly through your work, if you undertake it.
Believe me
My dear Dr Hooker
Yours very faithfully
Charles Knight

I am writing in great haste – I will write to you again by the next mail from Auckland, to which place I return by the Steamer now waiting in the harbour.

17. DC 175: Folio 947: Wellington – 11 September 1862- to J.D. Hooker

It is necessary that I should add that if you do not accede to the enlargement of the work by the addition of the Algae, that you are to receive £450 for a work such as you originally agreed to.
C.K.

18. DC 175: Folio 948: Wellington – 11 September 1862 – to J.D. Hooker
[Copy made by Charles Knight]

Dr Hooker's New Zealand Botany

Wellington, House of Representatives, 11 Septr 1862

It is estimated that the sum of one hundred pounds (£100) in addition to the vote of the 10th September will ensure the completion of the above work by the inclusion of the Sea Weeds.

It is thought that the House will not hesitate at its next sitting to vote this additional sum.

Pending the decision of the House on this question the undersigned undertake the payment in equal shares of the amount of one hundred Pounds (£100) for the above purpose.

J.H. Moorhouse
Reader Wood
W.N. Taylor
Crosbie Ward
A. Domett
Thomas Russell
H. Carleton
J. Williamson
Geo Graham
A. Saunders
Wm Fox
A. Brandon
C.M. Carter
J. Cracroft Wilson
I. Newton Watt
H.A. Atkinson
J.C. Richmond
Walter Mantell
Charles Knight
Wm Colenso
Wm Thompson
E.B. Cargill
I.T. Cookson
E.W. Stafford
H. E. Curtis
A.J. Richmond
M.G. Nixon
W. Mason
J. Munro

19. DC 175: Folio 949: Auckland - 30 October 1862 – to J.D. Hooker

My dear Dr Hooker,

The Colonial Secretary has written to you by the Mail a formal letter requesting you to undertake the proposed Manual of the N.Z. Flora.

The Under Secretary, Mr Gisborne[51], has requested me to mention that no allusion has been made in the public letter as to the period when payment of the Honorarium due to you is to be made.

If you will kindly let me know when the remittance should be made to you, I will take care that it is duly forwarded.

Any suggestions you may make respecting the work, I will use my best endeavours to carry out.

Believe me
Dear Dr Hooker
Yours very truly
Charles Knight

Pray give my respects to Sir W. Hooker. I trust that altogether he is better pleased with us. Mr Stafford on his return from Europe told me that Sir William was angry at finding so little had been done in recognition of your very valuable services.
C.K.

20. DC 175: Folio 950: Auckland - 2 May 1863 – to J.D. Hooker

My dear Dr Hooker,

I have this minute received a note from Colenso in which he quotes from your letter to him dated 3rd January last, as follows.

"About the New Zealand Flora I will gladly do my best and gratefully accept the Commission insofar as I am able. There is however one hitch – a mistake somewhere either on my part or my correspondents. My proposal was intended to be confined to the flowering plants and ferns... if I have time to do the other crypts creditably I will do so and expend the other £250 on the 2nd volume."

And in your letter to me of the same date you say "with regard to the Cryptogams, I had thought that I had excluded them in my proposal (you say that I excluded the Algae only) my reasons I thought were incompetency from want of time to study them properly be that as it may I will if I find I am competent when the rime comes gladly do my best to all, algae included getting such help as I can from Harvey and others."

As you fancy there is some mistake either on your part or mine I will indicate from your letter of the 22nd December 1861, the paragraph in which your offer was made –

"Again looking over your letter about the New Zealand Flora I may add that we found Reeve the only publisher who would undertake them at all and only on 100 copies being guaranteed on day of sale at retail prices not exceeding 20s/ per volume of 500-600 pages or so. The volumes will cost 15s/ - 20s/ (depending on prospects of colony purchasing) I think the N.Z. Flora with Ferns. Mosses, Hepatics, & Lichens might come into one thick volume to be sold at 30s/ which I would be glad to do for £300 – I would get Nylander to do the Lichens and do much of the Musci and Hepaticae myself. If the separate colonies of New Zealand were to combine for author's remuneration and purchase of 100 copies, it would be easily managed, only I should like to know soon."

I find that this offer was made after you had, in the same letter, called my attention to the fact that "the terms according to the scheme drawn up by Sir Wm Hooker and yourself were not for cryptogamiae which would require much higher pay, for these must be done by various authors who it is difficult to get to work at all. The crypts in short were not to be done at all in the scheme."

I think you will allow that there has been no mistake on my part – Your proposal required a grant of £450, the House gave £500 and I sent you the guarantee that it should be £600 if the Algae were included. The guarantee is as good as the vote – that is for the extra £100.

If you are quite decided in your doubts about the 2nd volume I should wish you to authorise me to state to the Government the difficulties in the way of completing the Commission - & it most likely you have already done so in reply to the official communication which was made to you on the subject - I am writing in haste but I must add that I shall be disappointed if we cannot complete the Flora – I am a man tenax propositi [= firm or tenacious of purpose], and like to carry out my schemes completely – I intend sooner or later, to have a Manual of the Geology of New Zealand – That is a Manual of Geology, in which the illustrations and facts will be drawn as much as possible from the N.Z. Field –

Haast and Hector are both in the field – and have made very interesting discoveries.

Believe me always
Very truly yours
Charles Knight

I may mention that the House has given me an extra hundred per annum together with a gratuity of the same amount.

I hear nothing of Wilson's Mosses – Don't forget that I am purchaser of a good collection of South American or East Indian Mosses – Would Spruce supply a set of South American Mosses and Lichens? If he would I leave you to make terms with him, if he is a correspondent of yours and you have time to attend to such a troublesome person as I am.

21. DC 175: Folio 952: Auckland - 31 May 1863 – to J.D. Hooker

My dear Hooker

I have to acknowledge your letter of the 3rd March last and to express my gratification on hearing from you that you have agreed to do the Manual for £500. I shall not rest content with such insufficient remuneration for the labor [sic] of getting out the complete work you have now formally undertaken. In respect of your inquiries it would be an advantage to keep down the selling price to 30s/ by squeezing the work into 900 pages but do not attempt this if it will seriously impair the usefulness of the work.

As to native names, the best plan is to give a list at the end of the book arranged alphabetically. The habitats of common plants are not worth giving in detail.

I should have been delighted to be with you at work on the Mosses and the *Jungermanniae*. I have many useful drawings by me. I am thinking seriously of publishing an atlas of drawings of the Mosses. I can work on these with the crayon as ?do most amateurs, but drawn in the style of T. West[52]; I think I can catch his manner capitally. I have two or three times had in my mind to offer you a brochure on the Mosses in aid of the Handbook – I am sure some of Wilson's species will not stand – especially some of the *Brya* and *Hypna*, but I cannot satisfy myself without I could inspect an authentic collection.

I notice what you say about the keys for the Mosses – I have not seen Sir William's edition of the Flora Britt[53]. I have Wilson's. I agree with you that the binary system is not the best; if tabulated it spreads itself laterally to an inconvenient extent, as you may see in Jussieu's[54] neat little work "Cours élémentaire d'Histoire Naturelle". Lindley's, or as you would write Bentham's, plan is capital.

But all this only makes me the more regret that I am so far away from you - even now, if you send me a set of the Mosses of which if I have time I will write a list, I will engage to let you have a paper on the Mosses with complete keys for the Genera & species which you may use or not as you please and I will return your plants with the proposed paper. I do not see any difficulty about the mode of sending them – They can be sent as a book parcel by mail; through Smith Elder & Co and two months after getting them I would return them through the Governor's despatch bag to the Colonial Office. At any rate I shall commence my work immediately and am quite satisfied that whether you can get it or not it will repay me for the trouble.

The natural arrangement of Mosses is full of difficulties. I cannot for the life of me satisfy myself what are the distinction characters of the genus *Isothecium*. I think you would do well to transfer the whole batch of Wilson's species to the genus *Hypnum*. No two Botanists agree about them. Mueller[55] has Wilson's nine species scattered right and left here a *Neckera* and there a *Hypnum*. Wilson has the *Hypnum gracilis* both among the *Isothecia* and the *Hypna* - (a novel way of getting over a difficulty) – while Mitten refers to *Stereodon* along with *I. arbuscula*. Again Mitten changes the *I. spininervium* into *Trachyloma* [*comosa* crossed out] *arcuata* and the *I. comosum* into *Trachyloma comosa* while Mueller would make a *Racopilum* of the former one. Altogether it is a Babel! Yet it is not advisable to depart unduly from the

arrangement adopted in your Flora unless it is very necessary. Supposing you keep to the Flora. I have just tried my hand at a key to the genus and this is the result.

Leaves nerveless or two nerved, operculum conical	
Leaves widely ovate	
Seta short, arcuate above	*I. arbuscula*
Seta longer, serpentine (somewhat sigmoid)	*I. pulvinatum*
Leaves narrow	*I. angustatum*
Leaves nerved	
Capsule smooth, operculum conical	*I. Menziesii*
Capsule striated, operculun long, beaked	
Nerve of leaf toothed at the back	
Leaves marginate	*I. marginatum*
Leaves not marginate	
Seta long, leaves distichous	*I. spininervium*
Seta short, leaves quadrifaceus	
inner peristome without cilia	*I. sulcatum*
Nerve of leaf not toothed areola roundish	*I. pandum*

I may remind you that possibly Bentham's Introduction will require some addition to include phraseology of the Mosses. Hepaticae & Algae.

I will now refer to yr Flora for the names of the Mosses I am in need of. It is now 4 O'clock & the Mails closes this evening.

List herewith
Believe me
Yours very truly
Charles Knight

22. DC 175: Folio 953: Auckland - 4 October 1863 – to J.D. Hooker

My dear Dr Hooker,

I hope you may have thought it best not to send me the specimens of New Zealand Mosses which I wrote to you about. This delectable war brings so many new duties upon me that literally I have not a moment to spare. If the Mosses come I will do what I can, and will certainly return them to you quickly. In times of emergency it is particularly one's duty to be as useful to the public as possible – I am Comptroller of Pay of about 3,000 Militiamen – This work would ordinarily require 4 paymasters with their "paymaster's sergeants" - But when it is considered that these Militiamen are formed into about 50 companies and these mostly independent companies or, what is nearly the same, form separate detachments, you will have some idea of the work on my hands – we have no paymasters – everything is left to me – At first the war of words was great indeed – Till at length the old fogies of Lieut Colonels and old Captains of the Line at length gave in, but at first they declared no regiment could go into the field without a paymaster. But I saw clearly "the thing" was to pay the men with great regularity, and, by an immediate audit, to prevent imposition as much as possible – They now all hold me in wholesome terror – and wonder where I got my

military knowledge, and how it is that the Queen's Regulations are at my finger ends – I have an office with the necessary ?force to take out money for the pay of the men on the front; and I am tickled at my own success – which is complete!

As I am in a vanitory mood this morning at the recollection of having put out Military Gentlemen thro' their facings; I may get rid of all my conceits in this note, and tell you what I really am proud of – It is our money Order business – This is the work of my hand entirely; it is clear of all complexity and what it was on the day I started it, such it remains; and were the business to increase a hundred fold, it could still be kept as a matter of account in the simple mode in which it now is. In England they destroyed some 4 or 5 sets of books till they settled down to their present complex system. In the neighbouring colony of Victoria I have been told they have already tried no less than 10 or 11 systems and now they are engaged on some new scheme and the manager of it is to get £800 a year. In Melbourne they have only one post for receipt and despatch of foreign mails – here in N.Z. we have about a dozen – It was no part of my duties to construct a Dept of this kind, but I foresaw that if I had to audit the M. Order accounts, I should sooner or later have the labor [sic] of bringing the accounts into a proper form so that I at once gave up all my leisure to the new Dept and to this day I have to conduct the whole of the M. Order correspondence with foreign countries and to report on every difficulty that occurs. If you add to these duties my directing the business of the several observatories and abstracting their observations, and managing the Patent Office you may form some notion of my multifarious duties – not the least of which are those of my own office which now numbers 11 clerks.

I have this morning been looking over my memo & analyses of the *Sphagna* of the Northern Island. I have not yet met with *S. cymbifolium*. The *S. australe* (?) herewith, resembles it, but is certainly distinct – the empty cortical cells of the stem (about 5 series of them) distinguishes it at once – both species however have spiral threads in the cortical cells of the branches, and this, supposing it to be the *S. cymbifolium* of Wilson, may have misled him as I see in the Bry. Britt: he lays much stress on this character as a peculiarity of *S. cym*. The only specimen of the *S. cymb*. I have seen is that in the W.A. collection of Drummond.

I shall be greatly obliged to you if you can supply me with South American Mosses and Lichens as you kindly hold out the hopes of doing – You have already sent me Drummond's American Mosses and the 54 species of the Indian Mosses for which I am much indebted to you. The Indian Mosses were particularly welcome – Drummond's Mosses were a present from Sir William whom I have already thanked for his considerate kindness. You ask if I have received any antarctic Mosses or Tasmanian Mosses from you – I have not received any. Nor have I seen Spruce's Pyrenaean Mosses nor Drummond's Scotch Mosses – both of which I should *[--- line missing]* ... purchase them for me. - Tuckerman's also especially the Lichens.

The title of the new Flora, must be "a Handbook of the N. Zd. Flora", unless you wish for the sake of uniformity to adopt one uniform with the Hong Kong Flora – I like the title "Handbook" it is suggestion of its real object and it is one which Munro [sic.] chose. I like to please him in these small matters, as he has taken much interest in your work. As to the Native names they should be added at the end of the last volume, and I will take care to obtain as many as possible and see to the correction of those given in the Flora. Colenso will be up here at the end of the month. I have no

time to collect nor do I believe there is much new in the Northern Island. There is no likelihood of any one visiting Mount Egmont. The people of Taranaki cannot pass beyond the military post i.e. about 4 miles from the town; and even in times of peace the natives are extremely jealous of white men visiting or exploring the mountain.

I send you tracings of the *Sphagnum australe* (?) and *S. Novo-Zelandicum* Mitt. and *Hypnum umbrosum* and some other Mosses – This last, *H. umbrosum*, is extremely scarce – I think Mr Kerr[56] is the only person who has gathered it, except myself; mine I found by mere accident among some other Mosses but where I collected it is a mystery to me.

What a strange person Gould[57] is! He has had the "bad faith" to copy my drawing of the head of the *Phascolomys latifrons* [= *Lasiorhinus latifrons*, hairy-nosed wombat. *Mammals of Australia* Vol. 1, pl. 59] without acknowledgement and has made a caricature of it besides. My drawing I gave several years ago to Sir George Grey who gave it to Gould. As mine is the only drawing in existence and mine was taken from the animal a few hours after its death, I may state with some confidence that Gould's drawing is a miserable caricature. The animal was hunted into its hole by night and suffocated there by lighted brushwood & grass. The hair on its body was close and the whole animal like a large ?rude – with smallish eyes and a <u>most</u> pronounced forearm, <u>excessively</u> muscled & covered with fine hair not with long hair as shewn in Gould's drawing. The animal is about only by night and in running its belly must be quite close to the ground – the profile of the animal is altogether wrong, and no one will ever be able to recognize the creature from Gould's drawing.

In the paper published in the Natural History Review you allude to drawings in outline, could you obtain for me a specimen of Harvey's plates which I suppose is the style you allude to. I shall in a day or two have landed from the "*Anne Wilson*" a set of tools for engraving on stone, then I shall try my hand with – but could you tell me on Mr Fitch's[58] authority which is the readiest and best mode of drawing outlines on stone whether his plan which I suppose is with a steel pen and a crayon or that with the slice point on an engraving.

I will in a day or two draw up a report of what has been done to secure your services for the Handbook – this will be laid on the Table of the House of Representatives and will be accompanied by a recommendation for an additional grant of £100.

Believe me
Yours very truly
Charles Knight

I am truly glad that Sir William so hearty & well

23. DC 175: Folio 955: Auckland - 31 October 1863 – to J.D. Hooker

My dear Dr Hooker,

I write to inform you that every thing is in train for the additional grant of £100 for the Manual. I have no doubt the House will vote the money; and I am not a little pleased that the Government has behaved so well in the matter. The Assembly is in session. In the first week we had a ministerial crisis – fortunately the same party is in and nearly the same ministers – fortunately for the country!

Our Colonial forces in this district number about six thousand men. I still control the expenditure and pay the whole without a single paymaster. I have this day completed arrangements for Military saving Banks and on so simple a plan that we shall readily carry it on even with the forces in the field – in fact we establish the Banks at the very time that the Queen's forces suspend the operation of theirs. I delight in all this; and am pleased with myself, much in the same way as I was pleased with you when I learned how busy you were in India on matters geological. I like to show the world that my dilettantism in scientific matters need not interfere with the more active duties of public life.

At this moment I can scarcely command my attention to this hurried note. Did you ever hear of a man digging a pit and falling into it – The Maories having entrenched themselves at Meremere – (at the first great bend of the Waikato) have with immense labour raised fortifications at Rangiriri at the outlet of the Waikati Lake – but there the maories have neglected to occupy expecting an attack at Meremere – The General (?) issuing Meremere passed on last night with 500 men to the entrenched camp at Rangiri and one is waiting anxiously to hear by telegram that the General has succeeded – if he has succeeded it will be a checkmate for the Maories as it established our forces in the very heart of Maoridom and cuts off their supplies from Meremere which will be taken immediately as a matter of course – The Ministry propose making another addition to my salary – I have made no request for it; but I think they ought to do it, as at the moment I am literally saving the Govt about £3000 a year.

With earnest wishes for the continued good health of Sir William.
Believe me
Yours very faithfully
Charles Knight

I have lately seen for the first time Sir William's Genera of Ferns – at least the numbers succeeding the 5th – you do not get out such stylish plates nowadays – some of them are really beautiful.

I have also lately seen your Tasmanian Flora [8] – The mosses are nearly all the same species as ours – I see Wilson quotes Mitten's ill digested descriptions. It is quite a bore to read them.

C.K.

24. DC 175: Folio 956: Auckland – 30 November 1864 – to J.D. Hooker

My dear Dr Hooker.

I hasten to forward you a few Lichens by return of mail. I have not had time to examine the "Handbook". It is certainly "got up" in good style. I am glad you included the Ferns in the first volume – It would have been better for the publishers, however, if it had gone into second. I have done literally nothing in botany for the last two years. I have sent on a collection of Lichens for the Revd. W.A. Leighton – You give the name "Allport" but as I thought this was not the name of the gentleman who wished to exchange with me I have addressed the parcel to the well known lichenologist "Leighton" If after all you are right will you kindly readdress the parcel that it may go to its right destination. It is said we are all to go to Wellington where the seat of Government is to be moved.

Dr Hector is busy with the great Dunedin Exhibition[59]. I am pleased to see you have fully recognized the indomitable perseverance of Mr Haast.

I see you have dedicated the Handbook to Sir George Grey – He was scarcely entitled in this instance to your compliment as he has taken no interest or trouble in the matter – However I do not see whom you could have dedicated to except to Dr Munro [sic] as the Speaker of the House of Representatives – and to him as the representative of the House.

Is it possible to obtain from Mr Spruce a collection of crypts from South America?

Believe me
Yours very faithfully
Charles Knight

I am afraid you will think I have done little to aid you in your work.

Is there any possibility of obtaining a sight of your collection of N.Z. Lichens – Babington has surely made too many of them - and Nylander is too easy in these matters – he evidently does not like "puffing" them

Believing that Mr Leighton would determine those species for me which I had no means of doing I have added his parcel to yours as being on the Public Service. When will Nylander publish his second volume?[60]
C.K.

Colenso has just been with me – he will write by next sea mail

25. DC 175: Folio 957: Auckland - 25 May 1865 – to J.D. Hooker

My Dear Dr Hooker,

I have this moment received your welcome letter of the 27th February last. In future my address is Wellington where I have resided since January last; the Government having been removed South. They have been compelled to send me up here to put things to rights. The pursuit of Botany and my other dabblings in Science I have abandoned for many months. Since the war, I have had no peace – I have had too much to do; and now I am driven up here by the urgency of public business at a time when one of my little ones is down with Scarlet fever; and when my eldest daughter is within a day or two of being married. At such times it is sad to be away from home. I returned yesterday from Ngaruawahia on the Waikato River where the Govt have several steamers for war purposes – one of them was placed at my disposal. I was tempted to take her on to Alexandra opposite the Pirongia Ranges, where Colonel Haultain[61] tells me Crypts of all kinds abound; especially Lichens. But the weather is very wet. Besides the Govt are allowing me two guineas a day for travelling in addition to my £800 per annum. While drawing so high an allowance; and having to prepare so many returns and reports for the next Session of the Assembly I cannot give even a week or two to any excursion for mere pleasure. I have had a peep into Lyell's new work and was pleased he had given you credit for your support of the Darwinian Theory. What a new view that Theory (no longer a dogma) gives. It confounds one to look back to the beginning of Life. But still more to the beginning of all things. The Earth, - the Sun, - the Stars – where was the beginning of all these! Or try to set up a Limit to Space and take, in your mind's eye, a look over the boundary – into what? Ah, my dear Doctor! how little do we know. But the Darwinian Theory is the greatest stride ever made.

I have written to Messrs Smith. Elder & Co to pay anything which may be charged for Spruce's Crypts.

Colenso is about to send you a packet of Crypts – he has written to me on the subject.

Perhaps you are right about the Dedication – but we should have been better pleased had you Dedicated your work to the Speaker of the House of Representatives and had recognized the desire the House has shewn to promote Science. The Governor has nothing whatever to do with it; and I do not think he would do anything for the mere love of Science – He is dreadfully cold and selfish – I have known him many years and I am sorry to write hard things of him – Why do you include the Fungi? Is it any part of the engagement? I know that I intended to exclude them. It might be well to look to the official correspondence.

I have little to communicate that you care for. And I must add that I am over worked.

Yours very faithfully
Charles Knight

26. DC 175: Folio 958: Wellington - 11 August 1865 – to J.D. Hooker

My Dear Dr Hooker.

I am wicked enough to be amused at your agonies in going through the Mosses and Lichens – of all tiresome and unsatisfactory things that of descriptive Cryptogamic Botany is the downright worst – there is nothing like it! Beware of Mitten - I am satisfied he is not to be depended on – he is a species monger of the darkest water. - Wilson is far better – he really has a turn for analysis but he has not Mitten's eye for forms. Look at your plates of *Hypnum elongatum* and *H. consimile* in Crypt. Antarct. t. 60 both figures are palpably *Bartramiae* – I dare say Mitten would never have made such a mistake; but then on the other hand Wilson would not have split up *Macromitrium prorepens* into 3 or 4 species. The best descriptions of Mosses are those of Mueller; but unfortunately he has made a perfect hash of the *Hypna* and allied genera. I am glad to hear you praise Harvey, he has the art in a special degree of rejecting what is useless in description. Dr Gray has it also. Among botanists I should say Brown[62] had it preeminently. It is only those who have made an analysis of his descriptions can tell how good they are. I did this once in South Australia more than 20 years ago – I saw this was the way to take up Botany but my removal here rendered all my work useless – and I have not cared to take up your work in the same way – Bentham and you are, I should think, doing admirable work in your Genera Plantarum[63]. I have the first part by me – It does me good even to look at such a book – It must in reality have been the work of years – gradually elaborated as you and Bentham worked at the different orders.

I am pretty sure that one half of Nylander's species in the genera *Sticta*, *Stictina* & *Ricasolia* are bad – they need the knife! Many thanks for your kindness in procuring the Pugillus [what can be held in the hand] of Mosses from Schimper[64] – How beautifully he engraves the stone. I have lately purchased his "Icones" & the "Synopsis – I enclose a money order for £4.2.6.

Our Parliament is sitting. An Audit Bill to give me a permanent salary of £800 a year has passed the second reading. I see by the papers that Mr Colenso is the only person in the House who opposed the Bill – Mine is a Patent Office – but up to the present time the salary provided by the Act was only £500 – This permanent increase will make me exceedingly comfortable and independent. Munro [sic] is still Speaker of the House he is admirably fitted for the office – He was in my office a few days since to talk over the Handbook – he was afraid you were insufficiently paid for your labors [sic] – I am sure that you are badly remunerated – at the same time you know how difficult it is to get public grants for scientific purposes. Dr Hector is engaged by the General Government[65]. He will move his establishment to Wellington and I shall see more of him – Pray don't forget the South American Crypts. Have you got Colenso's two packages – Travers[66] and I, & Rough[67] talk of a trip over the Nelson Ranges this summer – The last time I was there Munro [sic] and myself nearly came to grief – We were spinning down the tramway from the Dun Mountain at a fearful pace – the car jumped off the rails, Munro [sic] went head over heels about a dozen times down a hill nearly perpendicular. I and a companion sprung from the Car as it was going over the precipice – unfortunately my companion jumped on me & broke one of my floating ribs – but though I could scarcely draw my breath I laughed till the

tears ran down my cheeks to see Munro's [sic] extraordinary sommersaults – he lost his hat which he never found again and sprained his ankle.

Believe me
Dear Dr Hooker
Yours very faithfully
Charles Knight

I forward by this Mail a parcel of Lichens and drawings – if the measurements of the spores are of any use you will find them noted on the drawings – Will you send them to Mr Leighton when you have done with them – I have asked him to return them through Smith & Elder – In two or three month's time I will send him the rest of the Lichens to complete his set – My things are all in confusion and I can do nothing until I have time to arrange them – I knew there was nothing new in the Lichens I sent before; he will find some that are new in the present collection now forwarded.

C.K.

27. DC 175: Folio 960: Auckland - 29 August 1865 – to J.D. Hooker

My Dear Dr Hooker,

The Government here is selling some 30 or 40 copies of the Handbook to private parties who have urgently applied for them. What is Lovell Reeve about; he might have sold many copies of the work had he sent them out to the booksellers. When such a work is new, many are curious to have an early copy of it – not caring perhaps much for the contents - but choosing to have novelties of the kind on the drawing table – It is something to talk about with visitors. When the work is better known, people are less curious about it, and only those purchase it who really are in want of the work. The difficulty with the publishers perhaps is, the not knowing who are respectable booksellers to whom the copies should be consigned for sale.

The Ministers propose putting £500 on the Estimates for Dr Hochstetter's work on the Geology of these Islands. The work has been translated into English but I understand no publisher in England will [?undertake] the risk of printing. The illustrations are in chromo=lithography and the cost of printing & publishing in England would be between £2000 & £3000 – The Government would receive 500 copies of the work for £500 which seems to me very favourable terms for the Colony – If we obtain the grant, this will be another step in the right direction – far better than an elementary work which I had once thought of based on the Geology of N. Zd. Too little is known on the subject for such a work – The Colony has a formidable drag on its [? resources] in the way of Loans to be paid off within the next 30 years – We now deal in millions of pounds sterling where formerly we treated only in tens of thousands; and people get into the way of looking at £500 or £1000 with indifference.

I am afraid the New Zealand Handbook will not pay you for the trouble you are taking. Munro [sic] was concerned about it; and I think if I had suggested another £100 being paid to you he would have jumped at the notion. But I do not think the House would grant it; and both on your account and on account of our friends in the House I would not like a refusal. I write this with some compunctions of conscience

as I am afraid it was through my urgency you were induced to extend the work to the Lichens and Seaweeds. Heaven save you from your friends!

After two years hard work I have at length cast off that incubus the Comptrollership of the Militia pay and am now quietly settling down to my ordinary duties. Times of war are exceptional times. We are turning over a new leaf. We are using the friendly natives and the Militia against the Hauhaus – leaving the Imperial Troops in garrisons – I am myself very hopeful of the new state of things; - until the natives are afraid of the settlers there will be no peace! and strange to say the most gallant things have been done by the settlers – and very little indeed by the Imperial Troops – These do everything by rule and their proceedings are really the laughing stock of the natives – Our great Generals would dig a trench round the tents of the Numades! But as I was saying I am once more a free man, with no more official work than suffices to keep me out of mischief – Grey is talking about a "Fauna" of N.Zd. to be given to Sclater[68] to do – I am sure it is too early for such a work – no contributions have been made towards it worth speaking about.

I have a letter from Dr Masters[69] of the Gardn's Chronicle – he asks me to write for the Chronicle – but for the life of me I can't tell what would suit such a publication. I must get him to tell me more precisely what would be interesting to his readers for I suppose he is the Editor of the work.

On my recommendation the Govt has presented copies of the Handbook to those who[se] names are honorably mentioned in the preface. My copy is lying before me in the office; turning to the genus *Haastia* I am not certain about the "tailless anthers" but I will look to it and tell you the result – You persist in describing the leaves of the *Stellaria gracilenta* with "revolute" margins.

You continue to recommend the "single" microscope – nobody who has any regard for his eyes, - or who would wish to obtain facility in dissecting under high powers – should dream of using Coddington lenses – Smith & Beck's Dissecting "Compound" microscope with an "Erector"; is the instrument. I am surprised that the comfort and advantage attending the use of the compound microscope with an Erector are not more commonly known – Smith and Beck have long since destroyed their patterns for the simple microscope, like Ross's as an instrument out of date.

I remitted a post office order for the sum you paid for Schimper's Mosses; - with many thanks.

Dr Hector is very busy here in Wellington – I believe the General Govt will secure his valuable services – He is engaged in arranging a Museum – Mantell has been the prime mover in this business. And I believe we shall succeed, under Hector and his coadjutors, in getting together many valuable collections – I am very sorry to hear of Sir William's delicate state of health. Dr Munro [sic] has left on leave of the House – one of his children being in a most dangerous state from hydrocephalus.

Believe me
Yours very faithfully
Charles Knight

28. DC 175: Folio 962: Wellington - 10 July 1866 – to J.D. Hooker

My Dear Dr Hooker,

In reply to your note of the 13th May 1865, in which you kindly informed me that you had purchased of Schimper a collection of 200 rare Mosses, I remitted a P.O. Money Order for £4.2.6 –

As neither the Mosses have reached me nor you written about them further, I am uncertain whether the M. Order has reached you or Schimper's Mosses miscarried. Will you kindly tell me about them. The Government has disposed of the whole of its copies of the Handbook. How are you getting on with the second volume. I have very little time for the study of Botany. The Government has of late taken up my whole time by sending me about the country on Commissions, of which as I am always the President, the greatest portion of the work falls on me. Grey wished me to undertake the illustration of the Lichens Mosses and Grasses of New Zealand – I was to engrave them on stone with the needle after the manner of West. The expense of printing and paper was to be borne by the Governor. I had no sooner assented to the undertaking, then alarmed at the obligations I was about to incur I hastily withdrew my promise. I am busy building in Wellington trying to settle down. But these removals first to Wellington and then from one house to another make complete "pie" of my collections and things. These removes are as bad as a "fire". If it were not that my official duties suit me so exactly I would sell off and retire to England.

I am waiting daily in the expectation of hearing that you may be congratulated on your appointment to the Directorship of Kew Gardens[70] – I trust it will not be long before I hear the news.

Dr Munro is now Sir David, & he is again elected Speaker of the House of Representatives. Lady Munro is in Wellington – a most amiable, gentle creature!

With kind regards
Believe me
Yours very faithfully
Charles Knight

29. DC 175: Folio 963: Wellington - 7 November 1866 – to J.D. Hooker

My Dear Dr Hooker,

I have allowed myself only a few minutes before the Mail closes to inform you that Schimper's Mosses arrived last week and I suppose in a week or two I shall be in receipt of Spruce's Crypts for which I return you many thanks for the trouble you have taken. I enclose two P.O. Money Orders for £15.17.0

I am glad to hear you are printing the 2nd vol. of the Handbook. There are many enquiries for it. The more I see of the 1st volume the better I am pleased with it. - Our Under Secretary abuses me for sharp practice in recommending the Govt to sell the first volume only on condition of the 2nd vol. being paid for in advance. We have

sold a great many copies on those terms and the purchasers are becoming impatient for the 2nd vol. You have been decidedly successful in making a very difficult matter extremely simple by means of your analytical tables. I still like Lindley's the best and always find it the readiest means of determining the name of a plant.

I don't know whether you feel any pride in your work; but it certainly is not a small matter to be, as you are, the first to lead the young people of a distant colony to the cultivation of an interesting and useful science. Your name will go down to the latest times in connexion with it – are you a very hard man and do these things give you no satisfaction.

Dr Hector is gone to new Diggings on the West Coast.

The Governor has put on his boots and has joined the Colonial Forces in the field – It seems a strange arrangement that while the Governor is at the front between Wanganui & New Plymouth, the General is at Auckland and while our Militia is attacking the Natives in their fastnesses, the troops of the line are cooped up in their stockade mere spectators within half a days march of our operations –

Our Militia are eminently successful in the bush.
In haste
Yours very truly
Charles Knight

I have put up a new *Hypnum* which I collected in Southland

30. DC 175: Folio 965: Wellington - 17 April 1867 – to J.D. Hooker

My Dear Hooker,

I have not forgotten your request of the 25th June last, for ripe *Phormium* seeds to sow in Ireland. Your letter came too late in the season. The seeds were shed. You will receive by the next Panama Mail a parcel of the seeds. An intelligent person here assures me that a lot of seeds sent to Paris germinated freely.

I have lately compared Nylander's descriptions with the *Stictae* of N.Zd. I am satisfied his division of the genus into *Sticta, Stictina* & *Ricasolia* will not stand. He has himself lately removed his *Stictina filix* to *Sticta,* and his *Sticta fragillima* to *Stictina,* and so other botanists will wander about from *Sticta* to *Stictina*. I have not time to pursue this now. I have drawings of my dissections and will send you my notes on the subject.

Much obliged for the offer of a copy of Mougeot & Nestler's "Stirpes Crypt."[71] without the Lichens; but I don't think I want it as I have now nearly all the European Mosses and should find little interest in comparing Mougeot's specimens with my collection.

I am much pleased with Spruce's American Mosses. Is it intended to publish a description of them. He has not sent me many Lichens.

I note what you say about your deficiency in N.Zd. Lichens except the *Stictae*. I will send you two full suites of specimens' one for Nylander and the other for you, numbered; on condition that I get Nylander to send me the names. I am making up a large number of Mosses for Dr Schimper and a set of Lichens for Leighton.

I will make arrangements to supply you occasionally with seeds of N. Zealand plants.

Yours most truly
Charles Knight

31. DC 175: Folio 966: Wellington - 25 April 1867 – to J.D. Hooker

Dear Dr Hooker,

The Colonial Treasurer has overlooked the necessity of instructing Mr Morrison to pay for the Second Volume of the Handbook.

Your note to me of the 1st of March I have sent to the Colonial Secretary with the following Minute.

"The arrangement is, that £300 is to be paid to Dr Hooker for the 2nd volume of the Handbook on delivery of 100 copies to the Agent of the Colony in London.

"£300 was paid for the first volume; the second has, there can be no doubt, given Dr Hooker twice the labor [sic] and anxiety of the first volume.

"Mr Morrison[72] should be instructed to pay Dr Hooker £300 in full of all claims on account of the Handbook, - that since being held in reserve by the Colonial Treasurer to meet the present claim.

"The copies of the Handbook sold by the Govt realized £48 –

"The extra expense of £53.14. defrayed by Dr Hooker out of his private purse has been incurred for the purpose of incorporating the discoveries of Haast, Hector & Travers in the 2nd volume."

I understand from the Colonial Secretary, that he is willing to put this sum of £53.14. on the Estimates at the next meeting of the Assembly. There is always great uncertainty in these money matters – Mr Stafford the present Premier may be "out" long before the Estimates come on.

The seeds of the *Phormium* I have just seen packed in a bag. We tried their germinating powers in a little earth between pieces of coat flannel and found 70 in the 100 germinated. - The Post Office agent will bring the bag in his Cabin as far as Panama – When there he will put them in the Mail box.

Believe me
Yours very truly
Charles Knight

32. DC 175: Folio 967: Wellington - 8 June 1867 – to J.D. Hooker

My Dear Dr Hooker,

I forward by the Mail a box of Lichens for Dr Nylander – If I succeed through your kindness in obtaining from him the names of the Lichens I will then forward to your Museum a set of the plants named according to Nylander – I have on this occasion only sent the *Stictas*, for while in the midst of my work I receive advice to proceed to Auckland & the ?Natives - not blowing off steam waiting for me. Any expense you incur in transmitting the box to Dr Nylander I will of course repay. I have not time to write by this opportunity to Dr N. Indeed I don't know his address will you kindly so far interest yourself in the matter as to tell him who I am & where he should address me.

In haste
Yours very sincerely
Charles Knight [a letter written at great speed!]

33. DC 175: Folio 968: Wellington - 8 October 1867 – to J.D. Hooker

My dear Dr Hooker,

I am gratified to find you so entirely satisfied with our Government in the matter of the Handbook.

Dr Hector (Fig. 3) will have already informed you of the Cabinet *[see Yaldwyn & Hobbs 1998: frontispiece]* – so that Mrs Hooker, as well as yourself, will hold us in kind remembrance when you possess our specimen of New Zealand cabinet work. Sir George Grey has taken interest in it. In this we all feel that we are not only recognizing your services in the advancement of scientific enquiries, but those of Sir William Hooker – As regards Hector, Travers and myself it is most gratifying to have such an opportunity of shewing our friendship and of acknowledging our indebtedness of your kind courtesy.

I beg you would do whatever you like with the collection of *Sticta*. Retain them in the Kew collection or pass them on to any European Lichenologist who would take an interest in them.

I send today to your address a collection of New Zealand Mosses in return for those you forwarded to me from Dr Schimper – Will you kindly forward the parcel to Dr Schimper & let me know what expense you incur.

Yours faithfully
Charles Knight

34. DC 175: Folio 969: Wellington - 6 November 1867 – to J.D. Hooker

My dear Dr Hooker,

Many thanks for sending the *Stictas* to Nylander. Please return them to me through Smith & Elder if that way will give you the least trouble.

I will endeavour to obtain seed of the *Thuja*; some months will elapse before I can have an opportunity of getting them for you. I send by this mail seeds of a *Pittosporum* and the *Melicope ternata*.

Nylander has offered to name the N.Zd. Lichens for me.

Sir George Grey is recalled[73]. He is full of wrath at the manner in which this is done. The contest between him and the Military authorities here has been decidedly in favor of the latter. Grey proclaims himself shamefully used by the Colonial Office. He will probably return to England by the next mail, but he says that he has as yet come to no fixed determination whether he will return to England or not. We are expecting to hear news of his successor Sir George Bowen. I am of opinion the Colonial Office has played its part badly. - Sir George Grey, by length of service, has strong claims on their courtesy and forbearance. When his term of office has fully expired, as it has, they could have acted wisely by intimating to him in becoming terms the intention of appointing his successor – Instead of that they have exposed themselves to a hard fight by recalling him in a curt and offensive manner. There is no doubt Grey will fight them and will have the best of it.

Thanks also for your offer of seeds. We have an acre of ground in the town of Wellington where I have built a comfortable house. It is however so full of large well grown shrubs and trees that we have room only for mere "flowers" - pets like roses, azaleas, fuschias etc. At present therefore I will not avail myself of your kind offer.

Believe me
Yours very faithfully
Charles Knight

35. DC 175: Folio 970: Wellington - 17 December 1867 – to J.D. Hooker

My Dear Hooker,

I am suddenly ordered to the North. I leave this morning. I shall take advantage of the opportunity to obtain for you some seeds of the *Thuja Doriana*; I am curious to learn whether the seeds of the *Phormium* germinated with you.

I have just put up, to your address, a set of N.Z. Lichens for Dr Nylander. Will you kindly forward them to his address. The Professor has promised to determine them for me. I am indebted to your kindness for this. I have requested him not to return them, as I hold a duplicate set with the like numbers. Hector has just returned from Taupo. I have not heard of his doings yet. Grey returns by the Panama Boat in January. We are wondering what he purposes doing with his Island of Kawhau. He has spent much money there; and has a wonderful collection of deer, elks, antelopes, kangaroos, swans, rabbits etc; running about. One time he talked much of founding a College there with endowed professorships. He has lately adopted a young girl[74], an illegitimate daughter of his late half brother (Sir Godfrey Thomas) she returns with him to England. A cousin of mine, the Revd F. Thatcher[75], accompanies him – he has for some years been Grey's Priv. Secretary.

Hector will tell you that the General Assembly has passed a law making permanent provision for Dr Hector, the Museum, and Scientific Association. If I can get hold of a copy of the Act before the boat starts I will post it for you.

Believe me
Yours truly
Charles Knight

36. DC 175: Folio 971: Wellington - 20 July 1874 – to J.D. Hooker

My dear Dr Hooker.

I have not taken up your time in correspondence, because it is not right to encroach on any leisure at your disposal but there are subjects on which I trust, you will not find it troublesome to hear from me.

You will see by our Proceedings (when the last year's publication reaches you) that Hector has been busy on the fossil *Pythonamorpha* of N.Z. I helped a little in the examination of the teeth of the *Leiodon*.

On the 18th inst. I read a Presidential Address[76] and I forward you by post a newspaper report of the last half of the address. I have marked that portion on the Glacial Epoch in which I have alluded to some remarks of Giekie[77] in his last publication on the running water at the foot of glaciers. I do not know whether there is any novelty in what I have said, but I am under the impression that my explanation is new because Giekie ascribes the flow <u>entirely</u> to the melting of Ice from contact with the ground, instead of <u>mainly</u> from the pressure of the mass above. I would have sent

the extract to "Nature" but am afraid I may be mistaken as to the novelty f my remarks.

Dr Berggren[78] is here in Wellington. He has been led into greater expenses in travelling than his stipendium admits of. Haast appears to have misled him into a confident assurance that the Province of Canterbury would vote his travelling expenses and he was thus led to travel to the West Coast of the Middle Island with impediments out of proportion to his means – He was about to extend his researches to the foot of Mount Cooke [sic] with packhorses & men, when news reached him that the Provincial Council had rejected the recommendation of the Superintendent to vote the travelling expenses. - Of course he had to abandon such an expensive trip. He seems a hardy, good tempered fellow; and of course he believes he has made many discoveries of Mosses!

Believe me
My dear Dr Hooker
Very faithfully yours
Charles Knight

37. DC 175: Folio 972: Wellington - 21 November 1874 – to J.D. Hooker

My dear Dr Hooker,

I have lately examined duplicates of the Lichens sent to Dr Stirton[79] by our Mr Buchanan[80] and in reference to the descriptions published in the Transactions of the N.Z. Institute I find that *Baeomyces pertenuis* Stirton is the *Lecidea planella* Nyl described in Nylander's Syn. Lich. Novae Caled. p. 45.

Psoroma implexa Stirton is *Psoroma sphinctrina* v. *pholidotoides* Nyl. It grows on bark of trees – not on rocks as (inadvertently?) stated in Dr Stirton's description. It is to be observed that the same specimen may exhibit on one side simply a broad black boundary line and on another part coarse black radiating rhizinae.

Psoroma athroophyllum Stirton. This is a coarse variety of *Psoroma subpruinosum* Nyl. Like many common Lichens the *Ps. subpruinosum* runs into varieties. They all agree in their spores being either spherical or ovate and in a tendency to be what Dr Stirton calls crenulate but with no tendency to be pointed at the ends when ovate in outline. In the same ascus are often found both description of spores. In such instances I have thought it likely that the spherical appearance is owing to the spores lying transversely in the ascus and being seen "end on"; but I am not sure that such is the case.

Squamaria thaumasta, Stirton. This is the *Sq. perrugosa* Nyl. of which a full and excellent description is given by Dr Nylander in the Linnean Proceedings. The scales of the thallus, instead of being umbate, are more frequently depressed in the center [sic]. The spores are simple. Very rarely indeed are uniseptate spores met with it. It is closely allied to *Sq. gelida* Linn.

Lecidea campylospora, Stirton, is the *Lecanora Taitensis* Mont. as determined for me some years since by Dr Nylander.

Lecidea maculosa Stirton, is the *Lecidea leucophaea* Chev. *L. premnea* Fries. *L. grossa* (Nyl. in litt.) *L. melastegia* Nyl. etc Leighton's Exs 90! 125!

Melaspilea amphorodes Stirton is the *M. metabola* Nyl. (Syn. Lich. Nov. Caled. p. 69)

Lecidea (*Lecanora*?) *implicata* Stirton is the *Lecanora thelotremoides* (Nyl. In litt.)

Astrothelium prostratum, Stirton is the *A. ochrocleistum* Nyl.

There are others in Buchanan's collection named by Dr Stirton (but not published) open to criticism.I will take advantage of Dr Hector's return to Europe to send both Dr Stirton & Revd Mr Leighton a collection of N.Z. Lichens.

I hope you do not find our late Transactions less interesting than formerly.
Believe me
Dear Dr Hooker
Yours most faithfully
Charles Knight

P.S. I have not heard of Dr Nylander since the commencement of the Franco-German War. Do you know his address?
C.K.

38. DC 175: Folio 973: Wellington - 26 April 1881 – to J.D. Hooker

My Dear Sir Joseph,

I have this day despatched a Box to my agents, Henry S. King & Co, 65 Cornhill, in which I have put up to your address a small collection of New South Wales Lichens collected by me in the neighbourhood of Sydney. I have by the same opportunity sent a Paper to the Linnean[81] with drawings describing the species which I consider new.

I have retired from the Government Service on my Pension of £600 a year. My work now is in the use of the Lathe and in the study of Lichens. I am afraid you will add that I shall furnish another instance of the failure of those who commence cryptogamic Botany late in life, as you warned me many years since. I have done little hitherto and that badly; but I now see that with some facility in the use if the Pencil, and an aptitude for microscopic work that I may do useful work in the future. It is doubtful, as Dr Lionel Beale[82] says "whether an honest inquirer skilled in observation can be of greater use in his time than by making good drawings of what he has seen; we may reasonably hope that those who follow us will look at our drawings if we are careful to make honest copies of nature; but we can hardly expect that much that is

now written will be read some years hence when the whole aspect of the department of science we love to develop shall be completely changed"

I have been proposing to mount a collection of New Zealand Lichens for the Herbarium at Kew; but with such large collections as you have there, I am afraid you would not care to have further specimens put up when you have already all that you need in respect of N.Z. Lichens. Is such a collection needed for Kew?

I have lately heard from Professor Fries of Upsala[83] – he has sent me a very fine collection of North of Europe Lichens – He has asked me for a collection of N.Z. Lichens – which I have sent him in return. I suspect that Berggren has supplied him with materials & that Fries is now engaged in getting up a Paper on N.Z. Lichens. Fries tells me that Berggren is lately appointed a coadjutor of his & that he is daily expecting him at Upsala. Hector is very busy about matters meteorological & I see there is to be a meeting at Melbourne in which Hector represents N. Zealand. I hope to be in Sydney myself in about a month I intend to botanize on the Blue Mountains and work over the ground in the neighbourhood unexplored for Lichens as well as for other plants; but I see that he made no collections of saxicolous lichens.

Very sincerely yours
Charles Knight

By the bye Hector tells me that he sent you a copy of my paper on the *Thysanothecium Buchanani*[84] & that he had taken the liberty of altering "gonidia" into "gonimia". In doing so he has blundered, see last line but one.

39. DC 175: Folio 974: Wellington - 3 April 1882 – to J.D. Hooker

Dear Sir Joseph Hooker.

I am in receipt of your letter of 18th Decr. Many thanks for your Presidential Address to the Geogrl Sectn Brit. Association[85] I have read it with great interest, especially the remarks on the discovery in Arctic Regions of Fossil Plants whose existing representatives are to be found only in warm temperate climates. This marvellous discovery assures us that the climate of Greenland was, at one period of the Earth's history, warm if not equable; and that the logical result to come to is. That, as the Sun is the main source of terrestrial heat, the variations in the intensity of the forces in operation in that great luminary must necessarily have been enormous, - It may be that at some very remote period the heat and light radiated from the Sun's incandescent visible body may have been so great as to give Greenland a temperate climate and to have rendered vegetable life impossible in the Tropics; and on the other hand they may at another... [--- several lines missing] in force as to fill the entire valley of the Amazon with a gigantic glacier. Such changes may be yet further confirmed by our discovering within the Tropics fossil plants representatives of temperate climates only. If the earth, the stars & the sun are all under a law of transition, it is assuredly impossible that the supplies of heat & light from the surface of the sun can always have been of the same intensity under any modern theory you may adopt. But I must not tire you with these remarks.

After all my Paper on N.S. Wales Lichens was not lost. By a singular chance the "Brindisi" portion of the European Mail had been landed at Lyttelton and sent by Rail to the Bluff which port the unfortunate S.S. "*Tararua*"[86] never reached, having been wrecked on the coast between that port and Port Chalmers – Mr B.D. Jackson[87], one of the Secretaries of the Linnean Society, kindly wrote to me acknowledging the receipt of the Paper and asked me to write an Introduction to it, which I accordingly did, and sent to him to be in time for the November Meeting of the Society. Since then I have heard nothing more of the fate of the Paper and Drawings.

Very sincerely yours
Charles Knight

40. DC 175: Folio 975: Wellington - 14 June 1882 – to J.D. Hooker

My Dear Sir Joseph,

A few weeks since I informed you that my Paper on the Lichens of New South Wales had reached the Linnean Society in due course, and that the Secretary had requested me to send a few introductory remarks for reading at the next Meeting of the Linnean Society in November last. I complied at once; but have heard nothing since of the fate of the Paper.

I am naturally anxious to know what has become of it, as I have distributed some sets of the Lichens and my friends in Europe are left without any help from drawings or descriptions.

I do not know what the rule of the Society is, if my Paper has been considered unworthy of publication. Can it be returned to me through my agents (Messrs Henry S. King & Co 65 Cornhill London) or has it become absolutely the property of the Society.

I am quite sensible of the numerous demands on your time, and that it is somewhat unreasonable to trouble you with such a matter; but at this distance from home one is sometimes driven to ask the kind assistance of one's friends.

Believe me
Yours faithfully
Charles Knight

41. DC 175: Folio 976: Wellington - 31 July 1882 – to J.D. Hooker

Dear Sir Joseph Hooker,

Since writing by the last Mail I learn through a Report published in the "Journal of Botany" that the unfortunate Paper on the Lichens of N.S. Wales was read at a Meeting of the Linnean Society on the 2nd March last. I am sorry that I have unnecessarily troubled you in the matter. Let me add my sincere thanks for your constant and friendly encouragement. It would be very satisfactory to the Fellows of

the Linnean Society residing in these distant Colonies, if the Secretary would acknowledge the receipt of communications addressed to the Society.

Believe me
Yours faithfully
Charles Knight

42. DC 175: Folio 977: Wellington - 24 September 1883 – to J.D. Hooker

Dear Sir Joseph Hooker.

I have this day shipped on board S.S. *Doric* consigned to my agents, Henry S. King & Co, 65 Cornhill, London, a set of 180 New Zealand Lichens for the Kew Museum (list herewith). There are at least 100 species remaining, but of these I have at present no duplicates. I hope within a few months to enlarge my collections and be able to complete a set of N. Z. Lichens for your Museum.

It would be of great assistance to me to obtain specimens out of the large number of duplicates (named or unnamed) of Exotic Lichens deposited in the Museum at Kew. Those of Europe I have in very full sets presented to me by Leighton, Arnold[88], Fries, Nylander and others, together with those issued by Schaerer and Massalongo[89]. My agents in London will take charge and forward parcels directed to me.

I have seen lately in newspapers slight references to Tyndall's[90] late meterological researches, and on the heat-carrying property of air charged with aqueous vapor. At least such I gather from the vague notices in the daily papers here. I do not know where detailed accounts of his researches are to be found. They would greatly interest me after the slight attempt I made in my Presidential Address in the year 1874, to explain the course of the hot winds on the Canterbury Plains. The more genial climates of the southern portions of England and Ireland may be similarly accounted for. For instance when a hot south west wind sweeps over the Atlantic it becomes surcharged in its passage with aqueous vapor [sic] at the expense of its sensible heat – or in the words of modern Physics, the heat of the tropical atmosphere is made to do work in its passage across the sea by converting water into invisible vapor [sic], and maintaining it in that state until the coasts of Ireland and England are reached. According to Tyndall one pound of water so converted would absorb or render latent, a quantity of heat sufficient to meld 5 lbs of cast iron nearly. Hence a great factor in the amelioration of the climates of the southern portions of England and Ireland is due to the liberation of latent heat by the conversion of invisible vapor [sic] into fogs or heavy rains.

On the other hand, the easterly winds of England are dry winds, and take up moisture from surfaces over which they pass, and thus convert sensible into latent heat and produce cold. This loss of sensible heat will be most evident on calm days in the immediate vicinity of the surfaces over which the column of air passes and a thermometer placed adjacent to long grass or herbage should show a lower temperature than one raised a short distance above the ground.

Believe me,
Dear Sir Joseph
Yours very faithfully
Charles Knight

[Knight's lichen list is printed below. Currently accepted names following Galloway (2007), Galloway & Elix (2013) and McCarthy (2013), are added in square brackets; and an asterisk (*) refers to lichenicolous fungi; a question mark (?) indicates an uncertainty as to the correct status of a taxon].

Parmelia caperata, Ach. [*Flavoparmelia haysomii*]
P. conspersa, Ach. [*Xanthoparmelia scabrosa*]
P. latissima, Fée [*Parmotrema* sp.]
P. meizospora, Ach.
P. perlata, Ach. [*Parmotrema perlatum*]
P. pertusa, Schrank [*Menegazzia pertransita*]
P. physodes, Ach. [*Hypogymnia subphysodes*]
P. prolixa, Ach. [*Xanthoparmelia pulla*]
P. tenuirimis, Tayl. [*Parmelia tenuirima*]
Ricasolia coriacea, Hook.f. & Tayl. [*Pseudocyphellaria coriacea*]
R. adscripta, Nyl. [*Lobaria adscripta*]
R. herbacea, De Not. [= *Lobaria adscripta*]
R. montagnei, Bab. [*Pseudocyphellaria montagnei*]
Physcia chrysophthalma, Linn. [*Teloschistes chrysophthalmus*]
P. obscura, Schaer. = *stellaris*? [= ? *Hyperphyscia adglutinata*]
P. stellaris, Ach. [= *Physcia jackii*]
P. parietina, Ach. [*Xanthoria parietina*]
P. speciosa, Wulf. [= *Heterodermia speciosa*]
Coccocarpia smaragdina [= *Coccocarpia erythroxyli*]
Pannaria apiculata, Kn. [= *Parmeliella nigrocincta*]
P. atrofumosa, Kn. [= *Pannaria immixta*]
P. sordida, Kn. ?
P. subimmixta, Kn. [= *Fuscopannaria subimmixta*]
P. subsimilis, Kn. [= *Parmeliella nigrocincta*]
P. brunnea, Ach. ?
Chiodecton inconspicuum Kn. & Mitt. [= *Chiodecton colensoi*]
C. moniliatum, Stirton = *inconspicuum*, Kn. [= *Chiodecton colensoi*]
Psoroma pholidotoides, Nyl.
P. sphinctrinum, Mont. (Nyl.)
P. subpruinosum, Nyl. [= *Pannaria araneosa*]
P. sorediosum, Kn. [= *Pannaria reflectens* (Nyl.) P.M.Jørg. (Jørgensen 2011; McCarthy 2013)]
Phlyctis Neo-Zelandiae (Nyl.) [= *Phlyctis uncinata*]
P. ocellata, Kn. [= *Cryptolechia myriadella*]
P. oleosa, Stirt.
P. stromaphora, Kn. [= *Phlyctis oleosa*]
P. sordida, Kn.
Urceolaria Neo-Zelandiae, Kn. [= *Diploschistes euganeus*]
Usnea melaxantha [= *Usnea ciliata*]
U. trichodea [= *Usnea articulata*]

U. barbata = [*Usnea ciliifera*]
Leptogium leucocarpum [= *Collema leucocarpum*]
L. tremelloides [= *Leptogium aucklandicum*]
L. flaccidum [= *Collema* sp.]
Cladonia aggregata [= *Cladia aggregata*]
C. fimbriata
C. rangiferina [= *Cladonia confusa*]
C. retipora [= *Cladia retipora*]
C. sylvatica [= *Cladonia confusa*]
C. pycnoclada [= *Cladonia confusa*]
Sphaerophoron australe [= *Bunodophoron australe*]
Stereocaulon ramulosum
Nephromium sublaevigatum [= *Nephroma plumbeum*]
N. australe [= *Nephroma australe*]
N. arcticum [= *Nephroma australe*]
Ramalina calicaris, Ach. [= *Ramalina celastri*]
Coenogonium implexum
Odontotrema concentricum, Stirton [= *Ocellularia concentricum*]
Melaspilea metabola, Nyl. [= *Bactrospora metabola*]
M. lobulata, Kn. & Mitten
Ascidium melanoporum, Kn. [= *Aptrootia elatior* (Aptroot 2009)]
Peltigera rufescens, Hffm.
P. polydactyla, Hffm. [= *Peltigera dolichorhiza*]
Platygrapha macrospora [= *Bacidia macrospora*]
P. mecistospora [= *Bactrospora pleistophragmoides*]
P. myriommata [= *Lecanactis subfarinosa*]
Pertusaria communis
P. cucurbitula [= *Coccotrema cucurbitula*]
P. cupularis [= *Pertusaria truncata*]
P.graphica
P. leucodeoides
Thelotrema farinaceum
T. lepadinum
T. monosporum
T. saxatilis [= *Thelotrema saxatile*]
Sticta amphisticta [= *Pseudocyphellaria lividofusca*]
S. carpoloma [= *Pseudocyphellaria carpoloma*]
S. dissimulata [= *Pseudocyphellaria multifida*]
S. episticta [= *Pseudocyphellaria episticta*]
S. Freycinetii [= *Pseudocyphellaria glabra*]
S. filix
S. fossulata [= *Pseudocyphellaria rufovirescens*]
S. latifrons
S. orygmaea [*Pseudocyphellaria coronata*]
S. parvula [= *Sticta lacera*]
S. physciospora [= *Pseudocyphellaria physciospora*]
S. sinuosa [= *Sticta subcaperata*]
S. subcoriacea [= *Psedocyphellaria coriacea*]
S. subvariabilis [= *Pseudocyphellaria multifida*]
S. urvillei v. *flavicans* [= *Pseudopcyphellaria pickeringii*]

S. variabilis [? *Sticta squamata*]
S. aurata [= *Crocodia aurata*]
S. cinereo-glauca
S. Colensoi [= *Pseudocyphellaria colensoi*]
S. granulata [= *Pseudocyphellaria granulata*]
Stictina crocata [*Pseudocyphellaria crocata*]
S. fragillima [= *Pseudocyphellaria cinnamomea*]
S. fuliginosa
S. limbata
Verrucaria saxicola, Kn. non Mass. = *petrina*, Kn. [= *Porina guentheri*]
V. submargacea, Kn. [= *Verrucaria fusconigrescens*]
V. suffusa, Kn. [= *Polymeridium suffusum* (Aptroot & da Silva Cáceres 2013)
Baggliettoa ocellata, Kn. [= *Pertusaria erumpescens*]
Graphis assimilis, Nyl. = *anfractuosa*, Esch.
G. cyrtospora, Kn. ?
G. hypoleuca, Kn. = An *Opeg. ageleoides*, Nyl. (?) [= *Opegrapha agelaeoides*]
G. scripta, Ach.
G. sophistica, Nyl. ?
Porina endochrysa, Mont. = *Thelenella wellingtonii* Stirton [= *Porina exocha*]
Stigmatidium prominulum, Kn. [= *Porina quassiaecola*]
Astrothelium pyrenastroides, Kn. = *Verrucaria* [= *Pyrenula ravenelii*]
Opegrapha agelaeoides, Nyl.
O. saxatilis [= *Opegrapha diaphoriza*]
Fissurina inquinata, Kn. & Mitten
F. insidiosa, Kn. & Mitten
F. monospora, Kn. [= *Hemithecium contortum* (Archer 2005)]
F. reticulata, Kn. ?
F. rugosa, Kn. [= *Fissurina insidiosa*]
Baeomyces rufus, DC. [= *Baeomyces heteromorphus*]
B. marginata, Kn. ?
Arthonia ampliata, Kn. & Mitten [= *Arthothelium ampliatum*]
A. lirellaeformis, Kn. [= *Arthonia cinereopruinosa*]
A. lecideoides, Kn. [= *Arthothelium interveniens*]
A. lobulata, Kn. & Mitt. = *Melaspilea*?
A. pellucida, Kn. [= *Arthothelium pellucidum*]
A. spadicea, Kn.[= *Arthothelium spadiceum*]
**A. stictaria*, Kn.
A. suffusa, Kn. [= *Arthothelium suffusum*]
A. tenuissima, Kn. [= *Arthonia polymorpha*]
A. verruculosa, Kn. [= *Arthonia platygraphella*]
Lecanora albella, Pers. ?
L. atra, Ach. [= *Tephromela atra*]
L. cerasi, Knight ?
L. chrysosticta, Tayl. [= *Brigantiaea chrysosticta*]
L. coarctata, Ach. = *Lecidea* [= *Trapelia coarctata*]
L. flavo-pallescens, Nyl. (Kn.) [= *Lecanora flavopallida*]
L. Hageni, Ach.
L. parella, Ach. [= *Ochrolechia parella*]
L. punicea, Ach. [= *Haematomma babingtonii*]
L. pyracea, Ach. [= ? *Caloplaca subpyracea*]

L. subfusca, Ach. [= *Lecanora dispersa*]
L. thiomela, Nyl. [= *Rinodina thiomela*]
L. umbrina, Ehrh.
L. vitellina, Ach. [= *Candelariella vitellina*]
L. varia, Ach. [= *Lecanora semipallida*]
L. Brebissonii – L. homologa, Nyl. (?) [= *Caloplaca homologa*]
L. cyrtospora, Knight [= *Loxodella cyamidia*]
L. pallescens, *L. parella* [= *Ochrolechia pallescens*]
L. Babingtonii, *= L. punicea* [= *Haematomma babingtonii*]
Lecidea allotropa, Nyl. (Kn.) [= *Bacidia allotropa*]
L. atromorio, Kn.
L. caesiopallens, Nyl. (Kn.) [= *Megalaria melanotropa*]
L. cariosa, Kn. ?
L. contigua, Fries
L. conisalea, Kn.
L. crustulata, Ach. [= *Porpidia crustulata*]
L. glandulosa, Kn. [= *Lecidea canorufescens*]
L. grossa, Pers. [= *Megalaria grossa*]
L. intermixta, Nyl. ?
L. pyrophthalma = kelica, Stirt. [= *Stirtoniella kelica*]
L. lapicida, Fries
L. latypea, Ach.
L. litoralis, Kn. [= *Poeltiaria turgescens*]
L. marginiflexa, Tayl. [= *Megaloblastenia marginiflexa*]
L. meiospora, Nyl. ?
L. melanotropa, Nyl. [= *Megalaria melanotropa*]
L. oligosperma, Kn. ?
L. planella, Nyl. [= *Coenogonium luteum*]
L. parasema, Ach. [= *Buellia disciformis*]
L. rhypoderma, Kn.
L. stellulata, Tayl. [= *Buellia stellulata*]
L. subcoarctata, Kn. [= *Lecanora subcoarctata*]
L. subfarinosa, Kn. [= *Lecanactis subfarinosa*]
L. subglobulata, Kn. [= *Porpidia crustulata*]
L. sublapicida, Kn. [= *Lecidella sublapicida*]
L. subtubulata, Kn. [= *Rinodina subtubulata*]
L. Taitensis, Mont. (Kn.) [= *Megalospora campylospora*]
L. Whakatipae, Kn. [= **Monerolechia badia*]
L. fuscolutea, Dicks. [= *Brigantiaea fuscolutea*]
L. blastenioides, Kn. [= *Paraporpidia leptocarpa*]
L. enteroleuca, Ach.
L. nigrescens, Kn. [= *Micarea erratica*]
L. albocaerulescens, Wulf. [= *Porpidia albocaerulescens*]
L. geographica, Schaer. [= *Rhizocarpon geographicum*]
L. desmaspora, Kn. [= *Biatorella desmaspora*]
L. monospora, Kn. [= *Lopadium monosporum*]
L. conisaleoides, Kn. [= *Lecidea conisalea*]
L. fusco-lutea, Dicks. [= *Brigantiaea fuscolutea*]
Bacidia carneo-rufa, Kn. [= *Bacidia laurocerasi*]
B. chrysocarpa, Kn. [= *Bacidia leucocarpa*]

B. eucoccodes, Kn. [= *Bacidia laurocerasi*]
B. grumosa, Kn. ?
B. leucocarpa, Kn.
B. mesospora, Kn. [= *Bacidia superula*]
B. minutissima, Kn.
B. pannaroidea, Kn. [= *Bacidia wellingtonii*]
B. pseudopyrra, Kn. [= *Bacidia superula*]
B. rhodocarpa, Kn. [= *Bacidia laurocerasi*]
B. rimosa, Kn. [= *Bacidia laurocerasi*]
B. rosello-carnea, Kn. [= *Bacidia laurocerasi*]
B. spirospora, Kn. [= *Bacidia wellingtonii*]
B. stenospora, Kn. [= *Bacidia laurocerasi*]
B. subscripta, Kn. [= *Sarrameana albidoplumbea*]
B. albo-marginata, Kn. ?
B. spodoelaena, Kn. [= *Bacidia wellingtonii*]
Verrucaria astata, Kn. [=*Porina deliquescens*]
V. dealbata, Kn. [= *Pyrenula dealbata*]
V. gemellipara, Kn. [= *Arthopyrenia gemellipara*]
V. homolisma, Kn. [= *Pyrenula homalisma*]
V. megalospora, Kn.
V. margacea, Whl.
V. minutissima, Kn. [= *Mycomicrothelia minutissima*]
V. occulta, Kn. = *micromma*, Mont. [=*Pyrenula occulta*]
V. olivaceofusca, Kn. [= *Pyrenula knightiana*]
V. punctiformis, Ach. [= *Arthopyrenia punctiformis*]
V.pyrenastrolides, Kn. [= *Parmentaria pyrenastroides*]

To this letter Joseph Hooker has added the following note "...Nov. 29th and Dec. 5th sent through King & Co 3 parcels of Lichens 207 specimens named by Crombie..."]

Endnotes

1. The chapter on Musci in *Flora Novae Zealandiae* was written by William Wilson (Wilson 1854).

2. *Musci Exotici* (Hooker 1821).

3. William Wilson (1799-1871). British bryologist noted for his book *Bryologica Britannica*… (Wilson 1855). He collaborated with Joseph Hooker in preparing the chapters on mosses for both parts of *Flora Antarctica* (Hooker 1844-1847). Hooker generously marked this assistance thus "…I here most gratefully acknowledge the invaluable assistance afforded me in the more complete determination, and in the diagnoses and descriptions, of the mosses, but our old and valued friend William Wilson Esq, of Warrington; whose accuracy in botanical, and especially in microscopical investigations, and knowledge of this tribe of plants, are beyond praise…" (Hooker 1844).

4. The Ray Society was founded in 1844 to honour the name of John Ray (1628-1705), one of the most eminent and influential naturalists of his time. The Ray Society publishes books on natural history with special, but not exclusive reference to the flora and fauna of the British Isles.

5. William Mitten (1819-1906). English pharmacist and bryologist specialising in liverworts. He wrote the accounts of Hepaticae for both *Flora Novae Zealandiae* and *Flora Tasmaniae* and contributed in a major way to Joseph Hooker's treatment of the Hepaticae in the *Handbook of the New Zealand Flora.* Mitten's daughter, Annie, married Alfred Russel Wallace.

6 Thomas Drummond (1780-1835) *Musci Americani: or, specimens of Mosses, Jungermanniae, &c. collected by the late Thomas Drummond, in the southern states of North America. Arranged and named by W. Wilson and Sir. W.J. Hooker*. Numbers 1-180. Warrington, 1841 (Sayre 1971).

7 Ludwig Emmanuel Schaerer (1785-1853). Swiss lichenologist who published an enumeration of European lichens (Schaerer 1850). Charles Knight's annotated copy of this book is in the Landcare Library at Lincoln. Schaerer also produced extensive sets of exsiccatae (Sayre 1969; Crundwell & Hawksworth 1974). Knight purchased a complete set of Schaerer's exsiccata *Lichenes Helvetici Exsiccati* (1823-1852), now in WELT, from which he taught himself lichenology through a detailed microscopic examination of the material, annotating his copy Schaerer's with the resulting careful anatomical data, something the book lacked when published.

8 *Flora Tasmaniae* (Hooker 1855-1859).

9 Richard Spruce (1817-1893). Botanist and explorer (Seaward 1996a). Sets of his exsiccata "*Lichenes Amazonici et Andini*" (Sayre 1975: Seaward 1996b) are found in a number of herbaria. Spruce's personal lichen herbarium of some 2000 specimens is in the Manchester Museum (Edwards 1996).

10 The Wardian Case takes its name from its inventor Dr Nathaniel Bagshaw Ward (1791-1868). An enclosed glass container protective container for plants, it found great use in the 19th century in protecting foreign plants imported to Europe from overseas, the great majority of which had previously died from exposure during long sea journeys. William Jackson Hooker encouraged many of his plant collectors to send living material back to Kew in Wardian cases.

11 Kawau Island, purchased by Sir George Grey in November 1862, for £3,700. For a further £5000 he had Frederick Thatcher (Charles Knight's cousin) design transform the copper mine manager's house on the island into a mansion, Big House, later called Mansion House. Kawau became Grey's private retreat from the world (Bohan 1998).

12 William Henry Harvey FRS (1811-1866). Irish Algologist. Professor of Botany at Trinity College, Dublin. Friend of R.K. Greville, G.A. Walker Arnott, and especially of Sir William Jackson Hooker, and of Professor and Mrs Asa Gray of Harvard. Harvey visited Auckland in July 1855 where he met Knight writing of him "… I have also found a fellow worker in Mr. Knight (Auditor Genl.) who has a fine microscope & is an excellent draughtsman and is to send me drawings and specimens of the smaller algae…" (Ducker 1988: 233).

13 Sir Edward William Stafford (1819-1901). Nelson's first Superintendent, then at 37 New Zealand's youngest Prime Minister, holding office from 1856-1861, 1865-1869 and 1872 (Bohan 1994).

14 Dr Andrew Sinclair (1794-1861). Colonial Secretary, drowned while attempting to cross the Rangitata River while on a collecting trip with Julius Haast. Sinclair first met Joseph Hooker in the Bay of Islands in 1841, and for the next 20 years sent many specimens of New Zealand plants back to Kew. Along with William Colenso and David Lyall, he was one of the dedicatees of Hooker's *Flora Novae Zealandiae* (Molloy 1990, Galloway 1998, 2012a).

15 Airy's minimum-error azimuthal projection. This azimuthal projection is an analytic solution to the problem of minimizing shape and area error in a map projection. Named for George Biddell Airy (1801-1892), British astronomer and geodesist.

16 See Hooker (1855).

17 Sir William Dennison KCB (1804-1871). Governor General of Van Diemen's Land (Tasmania) from 1847-1855, then Governor General of New South Wales from 1855-1861.

18 Dr (later Sir) David Monro (1813-1877). Politician and botanical collector (especially of the Nelson region). Speaker of the House from 1861-1870 (Wright-St Clair 1971). Promoter of Hooker's *Handbook of the New Zealand Flora* (Galloway 1998).

19 John Lindley (1799-1865). English botanist. Professor of Botany, London University and at the Royal Institution. Author of many botanical books, including *The Vegetable Kingdom* (Lindley 1846).

20 Churchill Babington (1821-1889). British lichenologist who contributed the account of lichens for Hooker's *Flora Novae Zelandiae* (Babington 1855; Galloway 1991).

21 Smith Elder & Co, 65 Cornhill, London. This company was founded in 1816 and traded as booksellers, stationers, East India agents, shippers and bankers. In 1868 the banking and India agency work was taken over by Henry Samuel King, and established as Henry S. King & Co. The firm was noted for the employment of women as typists, as early as 1887, whereas most banks resisted this trend until the First World War.

22 See Wilson (1855).

23 William Allport Leighton (1805-1889). English lichenologist who was at school in Shrewsbury with Charles Darwin. He published profusely on British lichens (Hawksworth & Seaward 1977; Allen 2010) and also issued an exsiccata of 13 fascicles, *Lichenes Britannici exsiccati*, between 1851 and 1867 (Hawksworth & Seaward 1977: 110, 219) which Knight purchased and which is held in WELT. Knight also owned Leighton's important work on British lichens (Leighton 1879), and this copy is now held in the Library of Victoria University of Wellington. It is extensively annotated by Knight. Leighton was an important contact for Knight and introduced to him to several important European lichenologists (Galloway 2013b)

24 John Edward Gray FRS (1800-1875) British zoologist; Keeper of Zoology at the British Museum from 1840 to 1867, when the natural history collections moved from Bloomsbury to South Kensington.

25 Edward Forbes FRS (1815-1854). Zoologist, botanist and invertebrate palaeontologist. Professor Botany at King's College, London 1842. Palaeontologist with the Geological Survey, 1844-1845. Professor of Natural History, Edinburgh University 1845.

26 See Wallace (1853).

27 Linnean Society of London. Founded in 1788 by Sir James Edward Smith, and now the world's oldest active learned society devoted to the scientific study of living and extinct plants and animals (Gage & Stearn 1988).

28 On 22 December 1858, the Austrian Naval frigate *Novara* anchored in the Waitemata Harbour at Auckland having travelled across the Tasman Sea from Sydney. On board was the young Austrian

geologist Ferdinand Hochstetter, a PhD graduate of the University of Tübingen. Sailing from Trieste in the Adriatic, the *Novara* called at Rio de Janeiro, Cape Town (where Hochstetter met the Governor, Sir George Grey who told him about the volcanos and the thermal regions of North Island) and sailed across the Indian Ocean (calling at Sri Lanka), into the Pacific via Singapore and China, and then down to Sydney before sailing to New Zealand (Johnston & Nolden 2011).

29 Dr Karl Scherzer (1821-1903). Anthropologist, economist and historiographer to the *Novara* expedition (Johnston & Nolden 2011).

30 Commodore Baron Berhard von Wüllerstorf-Urbair (1816-1883). Captain/Commander of the *Novara* expedition (Johnston & Nolden 2011).

31 Charles Lyell FRS (1797-1875). Uniformitarian geologist. Professor of Geology, King's College, London. President of the Geological Society, 1834-1836 and 1849-1850. Scientific mentor and friend of Charles Darwin.

32 Jules Michelet (1798-1874). French historian.

33 Indian Mosses referred to may be from collections of Robert Wight (1796-1872) an Army surgeon station at Madras, where he was Superintendent of the Botanical Garden. He sent many thousands of specimens, including mosses to Kew to Sir William Hooker (Sayre 1975: 414).

34 Knight's paper on the bitentaculate slug was published in the *Transactions of the Linnean Society* (Knight 1859).

35 William Archer (1820-1874). Tasmanian architect, naturalist, landowner and politician. Dedicatee, together with Ronald Campbell Gunn, of Joseph Hooker's *Flora Tasmaniae* (Hooker 1855-1859).

36 Colonel (later General) William James Smythe FRS (1816-1887). Enlisted as 2nd lieutenant in the Royal Artillery in 1833. In 1860 he was sent by the British Government as special commissioner to report on the suitability of Fiji as a naval and coaling station and for the cultivation of cotton. His wife, Sarah Maria Bland (1832-1917) wrote and illustrated a lively account of their ten month residence in Fiji (including a chapter on their visit to Auckland in June 1860), to which Col. Smythe also contributed (see Smythe 1864; Eldridge 1967).

37 Native War, or the New Zealand Wars as they are known today. Knight is referring directly to the Taranaki and the Waikato Wars (see Sinclair 1961; Belich 1988, 1996; Prickett 2002).

38 Sir Julius von Haast FRS (1822-1887). New Zealand geologist and explorer. Appointed Provincial Geologist of Canterbury (1861-1868, 1874-1876), founded the Canterbury Museum and was Professor of Geology at Canterbury University College. A correspondent of Joseph Hooker, Charles Darwin and Ferdinand von Mueller in Melbourne (see Galloway 1976; Burrows 2005; Home et al. 1998, 2002, 2006; Nolden et al. 2013).

39 Miles Joseph Berkeley FRS (1803-1889), English mycologist and one of the founders of the science of plant pathology. Contributed the essay on Fungi to Hooker's *Flora Novae Zealandiae* (Berkeley 1855). He also wrote a widely used introductory book on lower plants (Berkeley 1857).

40 Walter Baldock Durant Mantell (1815-1890). Commissioner of Crown Lands for Otago, then Native Minister in several administrations. Member of the Legislative Council 1866-1895. A notable natural history collector. Correspondent of Lyell, Darwin and Richard Owen. Founding member of the New Zealand Institute, contributing many papers to its *Transactions*. Discoverer of *Notornis mantellii*.

41 William Colenso FRS (1811-1899). Printer, missionary, botanical explorer, writer and politician. Friend and long-term correspondent of Joseph Hooker to whom he sent copious collections of New Zealand plants. Dedicatee (along with David Lyall and Andrew Sinclair) of Hooker's *Flora Novae Zelandiae* (see Endersby 2008; St George 2009; Bagnall & Petersen 2012).

42 [Augustus] Lovell Reeve (1814-1865). London born conchologist and publisher, opened his first shop in King William Street, Strand and in 1848 moved to 5 Henrietta Street, Covent Garden from

where he published books on Botany, Conchology, Entomology, Chemistry, Travels, Antiquities, among them the several Colonial Floras initiated by Sir William Hooker at Kew, and many of Hooker's books, *Curtis's Botanical Magazine*, and a wide range of botanical, zoological and natural history books and guides.

43 George Bentham FRS (1800-1884) in collaboration with Joseph Hooker produced a new revision and reconstruction of the genera of plants under the title, *Genera Plantarum, ad exemplaria imprimis in herbariis kewensibus servata definita*. The work was published in three volumes between 1862 and 1883.

44 William Nylander (1822-1899). Finnish lichenologist resident in Paris and widely regarded as the most famous lichenologist of the 19th century (Ahti 1990). Knight sent him 225 New Zealand lichen specimens many of which he described as new (Nylander 1888; Galloway 2014)

45 Sir George Grey returned from South Africa to New Zealand as Governor, arriving in Auckland on HMS *Cossack* in 26 September 1861, to be greeted by "vast cheering crowds of European and Maori" (Bohan 1998: 200).

46 Sir Donald McLean KCMG (1820-1877). He was involved in negotiations between the settler government and Māori from 1844 to 1861, eventually as Native Secretary and Land Purchase Commissioner. Superintendent of Hawke's Bay Province 1863-1867. MP for Napier 1866-1877. Minister of Defence, 1869-1872 and Minister for Native Affairs. He was one of the most influential figures in Māori-Pākehā relations in the mid-1800s

47 Sir John Frederick William Herschel FRS (1792-1871). English mathematician, astronomer, chemist, experimental photographer/inventor and botanist. Son of the great astronomer William Herschel.

48 Sir James Hector MD, FRS (1834-1907). Scottish geologist. Geologist and Surgeon on the British North American Exploring Expedition under Sir Hugh Palliser, 1857-1860 (Spry 1963). Kicking Horse Pass in the Rockies commemorates the incident when Hector was kicked by his horse. Otago Provincial Geologist 1861-1865. Director of the Colonial Museum and New Zealand Geological Survey, Wellington 1865-1903/ Manager and President of the New Zealand Institute 1867-1903. Chancellor of the University of New Zealand 1885-1903 (Yaldwyn & Hobbs 1998; Burns & Nathan 2012).

49 Major (later Sir) John Larkins Cheese Richardson (1810-1878). Otago Provincial Superintendent 1861-1863, Speaker of the Legislative Council 1868-1878. First Vice Chancellor of Otago University, 1869.

50 Edgar Leopold Layard CMG (1824-1900). English public servant and ornithologist. In Ceylon from 1846 to 1855, then to the Cape, where he became Private Secretary to Sir George Grey in 1861. In 1887 he published *The Birds of South Africa* which describes 702 species.

51 William Gisborne (1825-1898). Public servant, Under Secretary for Lands, and then Under Secretary in the Colonial Secretary's office, promoted to Colonial Secretary in 1869. MP for Egmont. Retired to England in 1881. His *New Zealand Rulers and Statesmen* (Gisborne 1886) is a notable book, and was much praised.

52 Tuffen West (1824-1891). English illustrator of zoological and microscopical subjects. Chief illustrator of John Blackwall's *A history of the spiders of Great Britain and Ireland* (1861-1864).

53 A reference to *Muscologia Britannica* (Hooker & Taylor 1818).

54 Adrien-Henri de Jussieu (1797-1853). His book *Cours élémentaire d'histoire naturelle – Botanique*, ran to many editions. It is likely that Knight had the 8th edition published in Paris by Langlois et Leclercq in 1858.

55 Johann Karl August Müller (1818-1899). German bryologist at the University of Halle. His *Synopsis muscorum frondosum* in 2 volumes appeared in 1849 and 1851.

56 Kerr is mention in Hooker's *Handbook* (Hooker 1867: 473) as having collected *Hypnum umbrosum* from "Northern Island" his specimen being in Herb. Mitten.

57 John Gould FRS (1804-1881). Self-taught ornithologist and artist. Taxidermist to the Zoological Society of London, 1826-1881. Identified Darwin's birds from the *Beagle* voyage. Visited Australia 1838-1841, publishing his 7-volume work *The Birds of Australia* (1840-1848), and a three-volume study *The Mammals of Australia* (1849-1861).

58 Walter Hood Fitch (1817-1892). Scottish artist and illustrator. Trained as a pattern drawer at Henry Monteith's mill near Glasgow (where John Buchanan also trained as an apprentice), he was employed by William Jackson Hooker, then Regius Professor of Botany at Glasgow University, to illustrate *Curtis's Botanical Magazine*. In 1841 he moved with Hooker to the Royal Botanic Gardens at Kew, where he spent the rest of his life as Kew's major botanical illustrator. He was one of the most prolific botanical artists the world has ever known, publishing over 12 000 drawings (Lewis 1992).

59 The New Zealand Exhibition, held in Dunedin in 1865, began as a small display of industrial products, which was part of a fund-raising campaign for an Anglican Church. So much enthusiasm was generated however that a plan was put into action to hold a national display of New Zealand's various resources, with Dr James Hector as the main driving force. A site in Great King Street was secured and on 12 January 1865 the first New Zealand Exhibition was opened. Each province was represented as were Britain, Canada and Australia. During the 102 days the Exhibition was open over 31,000 people passed through the gates (McDonald 1965: 86).

60 Nylander's planned great work of the lichens of the world, *Synopsis Methodica Lichenum*, never appeared in its entirety. The first part, of 430 pages appeared in 1858 (Nylander 1858), while the second part (Nylander 1860) is incomplete and ends abruptly on page 64 in the middle of a species description!

61 Theodore Minet Haultain (1817-1902). Soldier and politician. Served as Minister of Colonial Defence in Edward Stafford's administration 1865-1869 (Hensley 1990).

62 Robert Brown FRS (1773-1858). Possibly the greatest of all British botanists - *facile Princeps Botanicorum* as he was designated by Humboldt - and widely known for his discovery of the cell nucleus, of protoplasmic streaming, and the nature of pollination and fertilisation. His name is commemorated through the description of the phenomenon now known as "Brownian Movement". Brown was Botanist to Matthew Flinders on the circumnavigation of Australia in the *Investigator* (1801-1805), and later became Botanist-Librarian to Sir Joseph Banks at Soho Square. Banks bequeathed a life-interest in his collections to Brown who eventually transferred them to the British Museum, becoming the Museum's first Keeper of Botany (Stearn 1981; Mabberley 1985).

63 *Genera Plantarum*… published in three volumes (see Bentham & Hooker 1862-1883; Stearn 1956).

64 Wilhelm Philippe Schimper (1808-1880). French bryologist, and correspondent of Knight's, who was Professor of Geology and Natural History in the University of Strasbourg, 1862-1879.

65 In 1860, Dr (later Sir) James Hector was recommended to the Otago Provincial Government as a suitable Director for the proposed Otago Geological Survey by Sir Roderick Murchison (1792-1871), Director-General of the British Geological Survey. During 1861, Murchison, Hector and the Edinburgh agents of the Otago Provincial Government worked out details of a three-year contract, and Hector arrived in Dunedin in April 1862 to take up the appointment (Stafford 1989; Burns & Nathan 2012)

66 William Thomas Locke Travers (1819-1903). Born in Ireland and educated in France. Emigrated to Nelson in 1849. Practised law in Nelson, Christchurch and Wellington. A keen explorer and naturalist, he was one of the founders of the New Zealand Institute to which he contributed 40 papers on botany, ornithology, geology and ethnology (Shepherd 1990).

67 David Rough (1815-1899). Harbourmaster and Immigration Officer at the port of Auckland from 1841. Appointed Collector of Customs in Nelson in 1856 until his retirement in 1868. A friend of Knight and Monro.

68 Philip Lutley Sclater FRS (1829-1913). English ornithologist, Secretary of the Zoological Society of London from 1860-1902. Founder and editor of the journal *Ibis*.

69 Maxwell Tylden Masters FRS (1833-1907). English botanist. Appointed principal editor of the influential weekly, *Gardener's Chronicle* in 1865, a position he held for many years.

70 Joseph Hooker was appointed Director of the Royal Botanic Gardens, Kew on 1 November 1865, in succession to his father, Sir William Hooker, who died on 12 August 1865 (Desmond 1999).

71 Jean Baptiste Mougeot (1776-1858), Christian Gottfried Nestler (1778-1832), Wilhelm Philipp Schimper (1808-1880), Jean Antoine Mougeot (1815-1889) & Casimir Roumeguère (1828-1892) (1810-1890) *Stirpes cryptogamae Vogeso-Rhenanae; quas in rheni superioris inferiorisque, nec non vogesorum praefecturis collegerunt.* Fascicles I-XVI, numbers 1-1600, Bruyerii Vogesorum (Vivot) (see Sayre 1969: 37-38).

72 John Morrison (1824-1911) New Zealand Government Agent in London, 1858-1875.

73 Towards the end of 1867, the British government recalled Sir George Grey, and he was replaced as Governor by Sir George Bowen in February 1868 (Bohan 1998).

74 Annie Maria Matthews (1853-1938). Adopted by Sir George Grey in 1861, following the death of her father, Grey's half-brother, Sir Godfrey Thomas. She married Seymour George Thorne, Kawau's estate manager, on 3 December 1872 on Kawau Island, the occasion for a lavish celebration at Mansion House (Bohan 1998: 246).

75 Rev. Frederick Thatcher (1814-1890). English-born architect, priest and private secretary. Designed a number of wooden churches in the Gothic style (including Old St Pauls, Wellington) and Sir George Grey's Mansion House on Kawau Island. Returned to England in 1862 and died at Bakewell, Derbyshire (Alington 2007). Knight shared accommodation in Auckland with Thatcher and Reader Wood for most of 1846 (Margaret Alington, *pers. comm.* 2003).

76 Knight's Presidential Address was delivered to the Wellington Philosophical Society on 18 July 1874 (Knight 1875d).

77 Sir Archibald Giekie OM, KCB, PRS, FRSE (1835-1924). Eminent Scottish geologist, who wrote many papers and books on geology, geomorphology and land surface erosion and produced geological maps. President of both the Royal Society and the Geological Society, he was also the biographer of Edward Forbes and Sir Roderick Murchison. The Giekie Glacier (Otago) in the Dart Valley below Marion Tower and Mt Troas was named by Jack Holloway in the 1930s.

78 Sven Berggren (1837-1917). Swedish bryologist from Lund who made an extended visit to New Zealand in 1874-1875 to collect lichens, mosses, seaweeds and flowering plants, from the Bay of Islands to Invercargill (Galloway 2011). His New Zealand lichens were published by Hellbom (1896).

79 James Stirton (1833-1917). Scottish bryologist and lichenologist, who described many new lichens from John Buchanan's New Zealand collections (Galloway 2012b, 2012c).

80 John Buchanan (1819-1898). Draughtsman-botanist at the Colonial Museum under James Hector. A distinguished artist and illustrator and botanical collector he travelled widely in Otago from after his arrival from Scotland in 1852, and subsequently throughout New Zealand after his appointment to the Colonial Museum in 1865 (see Adams 2002).

81 Knight's paper on New South Wales lichens (Knight 1882), recorded 52 lichens, 40 of which were newly described.

82 Lionel Smith Beale FRS (1828-1906). British physician, microscopist and Professor of Physiology and Anatomy at King's College, London. His widely used book, *How to work with the microscope*, ran to 5 editions.

83 Theodor ("Thore") Magnus Fries, (1832-1913). Professor of Botany at Uppsala University (Galloway 2013a).

84 *Thysanothecium buchanani* described by Knight (1881) is now referred to *Psoroma buchanani* (Galloway 1985, 2007).

85 see Hooker (1868).

86 In the early hours of Friday morning 29 April 1881, the passenger steamer *Tararua*, en route from Dunedin to Melbourne via Bluff and Hobart, ran aground on the Otara Reef near Waipapa Point on the south coast of South Island, with the loss of 131 lives (Galloway 2013a: 13-14)

87 Benjamin Daydon Jackson (1846-1927). Botanical Secretary of the Linnean Society of London from 1880 -1902, and General Secretary from 1902 -1926 (Gage & Stearn 1988).

88 Ferdinand Christian Gustav Arnold (1828-1901). German lawyer and lichenologist who amassed a vast lichen herbarium of 120,000 specimens (now in M), and who wrote some 140 papers (Kärnefelt et al. 2012). He was also a prolific editor of lichen exsiccatae, distributing 3000 specimens in 5 series. Knight contributed several taxa to these.

89 Abramo Bartolomeo Massalongo (1824-1860). Prolific Italian lichenologist and palaeontologist who lived in Verona in northern Italy. In his lichen work, accomplished in a mere 10 years, Massalongo described 145 new lichen genera, more anyone, either before or since, in the history of lichenology (Galloway 2013c). Specimens from his lichen herbarium were issued under an exsiccatae series distributed by Martino Anzi (Sayre 1969)

90 John Tyndall FRS (1820-1893). Prominent English physicist and Professor of Physics at the Royal Institution in London. The Tyndall Glacier and Mt Tyndall at the head of Snowy Creek, a tributary of the Dart River (Otago) is named in his honour.

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Table 1: Comparative chronology of Charles Knight, William Jackson Hooker and Joseph Dalton Hooker during the years that they corresponded (1852-1883)

1852
Charles Knight in his 6th year as Auditor-General of New Zealand in Auckland
Sir William Hooker in his 12th year as Director of the Royal Botanic Gardens, Kew
Joseph Hooker at work on the preparation and publication of *Flora Novae Zealandiae* and *Flora Tasmaniae*, the latter two parts of *The Botany of the Antarctic Voyage* published in 6 volumes between June 1852 and 31 December 1859

1853
Joseph Hooker publishes Part I of *Flora Novae Zealandiae*

1855
Joseph Hooker appointed Assistant Director of the Royal Botanic Gardens, Kew
Churchill Babington publishes his account of New Zealand lichens in Hooker's *Flora Novae Zelandiae*, Part II

1856
Charles Knight made Manager of the Colonial Bank of Issue

1857
Charles Knight elected Fellow of the Linnean Society of London (FLS), proposed by W.J. Hooker, J.D. Hooker and Andrew Sinclair
Charles Knight appointed Governor of the New Zealand Institute

1858
Charles Knight made Auditor of Public Accounts, his office of Auditor-General made a patent one by Act of Parliament
Joseph Hooker and Charles Lyell read a joint paper from Charles Darwin and Alfred Russel Wallace on Natural Selection to a meeting of the Linnean Society of London on 1 July. It provoked no discussion.

1859
Joseph Hooker publishes the final part of *Flora Tasmaniae*

1860
Charles Knight proposes to Joseph Hooker that he prepare a popular book on the Flora of New Zealand. Knight publishes two papers on New Zealand lichens in the *Transactions of the Linnean Society*, one on his own account and one co-authored with the English bryologist William Mitten

1861
Charles Knight takes charge of Meteorological Department and establishes 10 stations from Mangonui to Foveaux Strait

1862
Charles Knight on board the *White Swan* when it was wrecked off Castlepoint on 29 September

1863
Charles Knight secures an extra £100 for Hooker, making his emolument from the New Zealand Government for the *Handbook of the New Zealand Flora*, £600

1864
Part I of Joseph Hooker's *Handbook of the New Zealand Flora* published

1865
Sir William Hooker dies
Joseph Hooker appointed Director of the Royal Botanic Gardens, Kew
Charles Knight moves from Auckland to Wellington with the seat of Government

1866
Charles Knight appointed Civil Service Commissioner

1867
Part II of Joseph Hooker's *Handbook of the New Zealand Flora* published
Charles Knight sends lichens and first writes to William Nylander in Paris
Charles Knight elected Trustee of the Post Offices Savings Bank

1868
Charles Knight travels with Julius Vogel to Australia to negotiate a mail and customs agreement
Charles Knight travels to London with Sir George Grey, visits the Linnean Society and works at Kew (1869) for two months on collections of *Sticta*

1869
Charles Knight elected Fellow of the Royal College of Surgeons (FRCS)

1873
Joseph Hooker elected President of the Royal Society
Charles Knight elected President of the Wellington Philosophical Society for 1873-1874

1875
Around this time, Charles Knight sends a large collection of lichens to Arnold and von Krempelhuber in Germany the results of which were later published (Krempelhuber 1877)

1877
Joseph Hooker knighted (KCSI)

1878
Knight retires on a pension of £600 a year
Joseph Hooker retires as President of the Royal Society

1881
Charles Knight visits Australia (Sydney)

1882
Charles Knight sends New Zealand lichens to Arnold in Munich, and to Nylander in Paris

1883
Charles Knight sends a large collection of lichens to Kew, also a large collection of lichens to Prof. Hugo Lojka in Budapest for circulation in his exsiccata *Lichenotheca Universalis*, and a large number of lichens to Müller Argoviensis in Geneva

1885
Joseph Hooker retires from Kew

1886
Lojka's *Lichenotheca Universalis III* published, containing 21 (of a total of 50 numbers) species collected by Knight. Charles Knight sends New Zealand and Australian lichens to Lojka in Budapest and Müller Argoviensis in Geneva

1887
Charles Knight sends additional New Zealand and Australian lichens to Müller Argoviensis in Geneva

1888
William Nylander publishes *Lichenes Novae Zealandiae* recording 371 taxa, of which 225 were collected by Knight.

1891
Charles Knight dies

1892
Müller Argoviensis publishes his account of Knight's New Zealand lichens (Müller Argoviensis 1892).

1911
Joseph Hooker dies