Number 48 September 2014

Alan Mason 1923-2014

Journal of the Historical Studies Group

Geoscience Society of New Zealand

ISSN 2253-2951

Charles Darwin's New Zealand correspondents

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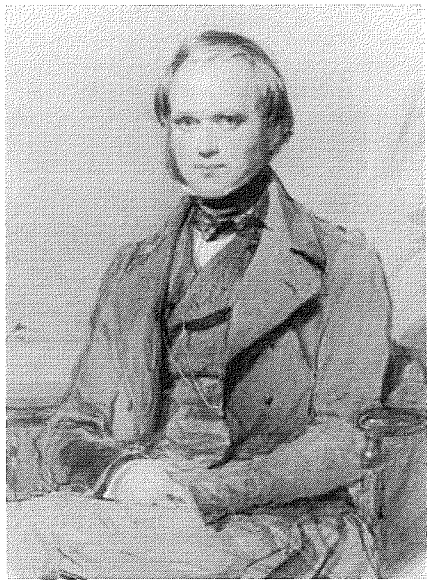
When Charles Darwin's book *On the Origin of Species* was published in 1859, many of the older scientists in most parts of the world opposed his ideas. In New Zealand, severe criticisms were made by sundry bishops, clergymen and others, including Dr. A. C. Barker, T. W. Leys and J. C. Firth. But it appears that New Zealand was probably the only country in which every significant scientist in the second half of the 19th century was a public supporter of Darwin and his work on evolution.



Charles Robert Darwin (1809-1882). (Watercolour portrait by George Richmond 1840, in Down House; Moorehead 1969)

The Voyage of the *Beagle*

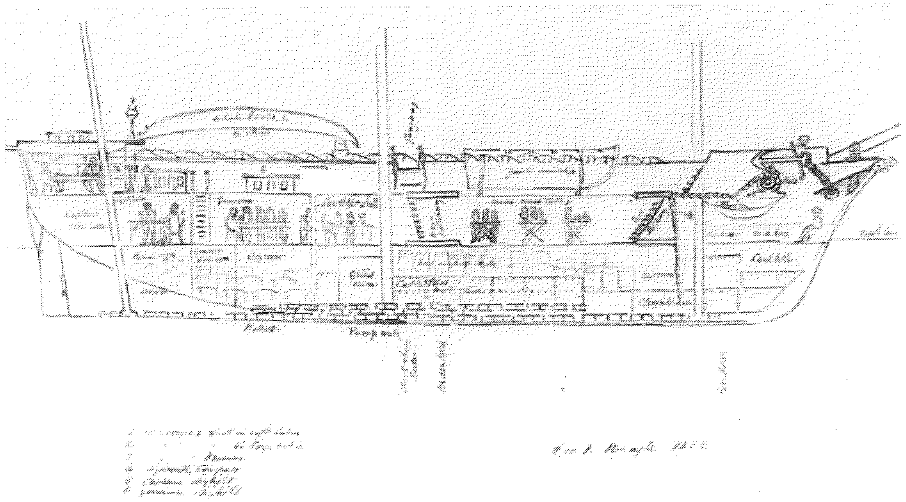
The voyage of the *Beagle*, from 27 December 1831, to 2 October 2 1836, was undertaken primarily to complete the Royal Navy project of charting the coasts of Patagonia and Tierra del Fuego - an exceptionally difficult task in which Captain Robert FitzRoy FRS (1805-1865) proved himself to be one of the very greatest of navigators and marine cartographers. FitzRoy's charts remained the basis for navigation charts of the Magellan Straits until the late 20th century (Mellersh 1968; the first full biography of FitzRoy, with a very detailed analysis of the relations between Darwin and FitzRoy).

During the previous survey of Patagonia (1826-1830) by HMS *Adventure* and HMS *Beagle*, the strain and isolation of the command had driven the captain of the *Beagle* to shoot himself (which he bungled), and Robert FitzRoy had been appointed (at the age of 23) to take over command of the *Beagle*, FitzRoy was already concerned about his own mental stability, and shortly before the *Beagle* left England in 1831 he arranged for some gentleman naturalist to travel on the ship, so that he could have someone to talk to. An official naturalist had already been appointed for the voyage, and hence the young gentleman who was hastily selected became described officially as "naturalist without pay" (Burstyn 1975). The official naturalist soon faded into total obscurity, but that young gentleman was Charles Robert Darwin FRS (1809-1882), and he made the voyage of the *Beagle* into the greatest of all voyages of discovery. Charles Darwin on the *Beagle* has aptly been described (somewhere) as "an earnest young man,

seemingly intent upon packing the entire continent of South America into crates, and shipping them back to England".

Captain Robert FitzRoy at about 30 years of age; an "artistic" portrait by an unknown artist based on the 1836 sketch by Philip Gidley King (Mitchell Library, Sydney).

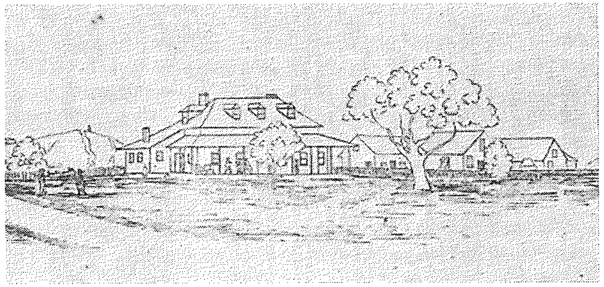
***Below**. Diagrammatic section of HMS Beagle drawn from memory by Phillip Gidley King in 1890 (State Library of NSW, Sydney). The Beagle was a brig of only 250 tonnes, 27m long and 7.5m wide (Nicholas 1989, p.9). Darwin, for whom the ship was home for almost 5 years, wrote to his mentor Professor Henslow (17 September 1831) after he first saw the brig that, "The absolute want of room is an evil that nothing can surmount".*



Darwin in New Zealand[1]

After three gruelling years spent in charting the southern coasts of South America, the *Beagle* sailed westwards for England. It called at the Galapagos Islands (where Darwin gained his first insight into evolution), at Tahiti and then at New Zealand, arriving at the Bay of Islands on 21 December 1835. Kororareka was then an un-edifying example of culture-contact between Europe and Polynesia. Darwin met the Reverend William Williams, who invited him to visit the Waimate mission station. On 23 December 1835, the British Resident James Busby took

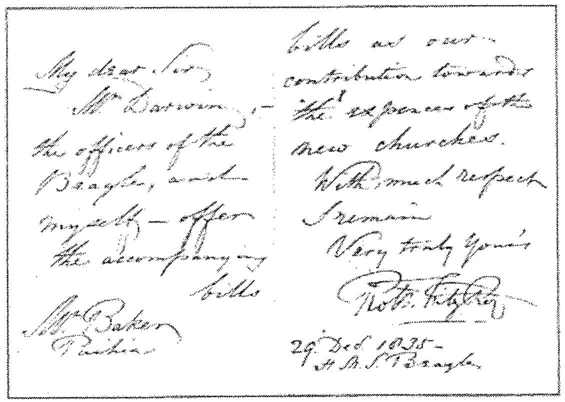
Darwin by boat up a creek to a waterfall, from where Darwin walked inland to the mission station at Waimate. Although Darwin wrote Busby's name correctly in his journal, in the very many published editions of his *Journal of Researches he* consistently mis-spells his name as "Bushby". Darwin was favourably impressed by the English-style farm with many plants and animals introduced into New Zealand, including "gooseberries, currants, hops" and also "gorse for hedges"(!). He wrote that "The house had been built, the windows framed, the fields ploughed, and even the trees grafted, by the New Zealanders. At the mill, a New Zealander was seen powdered with flour, like his brother miller in England" (Darwin 1845, p.309; 1889 edition).



Waimate Mission House, drawn by William Bainbridge in 1844 (Stacpoole 1971).

On 24 December, Darwin borrowed a horse and rode back to the Bay of Islands. The following day he attended church services in the chapel at Paihia, and spent much of the day with the missionary printer William Colenso FRS. On 26 December, James Busby took Darwin by boat to Kawakawa, from where they walked to the curious limestone formations at Waiomio. Those rocks had been used as burial places and accordingly were tapu to the Maoris, but Darwin and his companions were allowed to examine the whole area. Darwin wrote to his sister Caroline (27 December 1835) that the missionaries had complained about Darwin's friend Augustus Earle (artist on the *Beagle* in 1831-1832), who had criticised the missionaries in his book (Earle 1832). Darwin considered that Earle had been unjust to the missionaries.

At Kororareka (now called Russell) the missionaries were building Christ Church, the first church in New Zealand. On 29 December 1835, Captain FitzRoy wrote the following letter to the missionary Charles Baker (Baker 1969, p.75). The Donations Book for Christ Church records that Darwin and FitzRoy each donated 5 pounds, and the officers of the *Beagle* donated another 5 pounds.



My dear Sir,
Mr Darwin, – the officers of the Beagle, and myself – offer the accompanying bills as our contribution towards the expenses of the new churches.
With much respect
I remain
Very truly yours
Robt FitzRoy
29 Decr 1835 –
H.M.S. Beagle
Mr Baker
Paihia

Captain FitzRoy's letter to Charles Baker.

1
Introduction

In December 1831, the Royal Navy's HMS *Beagle* left England on its second surveying voyage. On board was a young man called Charles Darwin. During the voyage, he took every opportunity to examine the geological formations and the myriad forms of plants and animals, both living and fossil, in the different parts of the world visited by the *Beagle*. The many observations made by Darwin during the voyage led him to question conventional wisdom on the origin of species, and sowed the seeds for his thinking about evolution. Combining his *Beagle* observations with masses of information collected after his return to England, Darwin gradually developed an idea as to how evolution could have occurred, and in 1859 he published his revolutionary book, *On the Origin of Species by Means of Natural Selection*. By providing Darwin with the initial impetus for the development of his far-reaching ideas, the *Beagle*'s voyage has become an important event in world history.

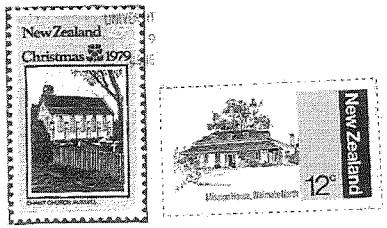
During this voyage, the *Beagle* visited Australia, giving Darwin an opportunity to examine and explore the infant colony. Owing mainly to his own understated account of the visit in his published *Journal* (1839 and 1845), the general view has emerged that Darwin did and saw nothing of importance in Australia; that the visit was of no consequence. However, examination of all the relevant material, much of it unpublished, reveals that he was actually very active and observant during his visit, that he collected numerous specimens of animals and rocks, and that he made a number of observations that played a role in the development of his ideas on evolution.

Darwin's Australian visit is also important because it provides a view of the colony through the eyes of someone who at the time was a young and unknown naturalist, but who has since become a leading figure in the history of science.

In addition, the story of the *Beagle*'s visit to Australia provides a focus on the lives of a number of people who are now remembered for their prominent achievements in science, arts, and politics.

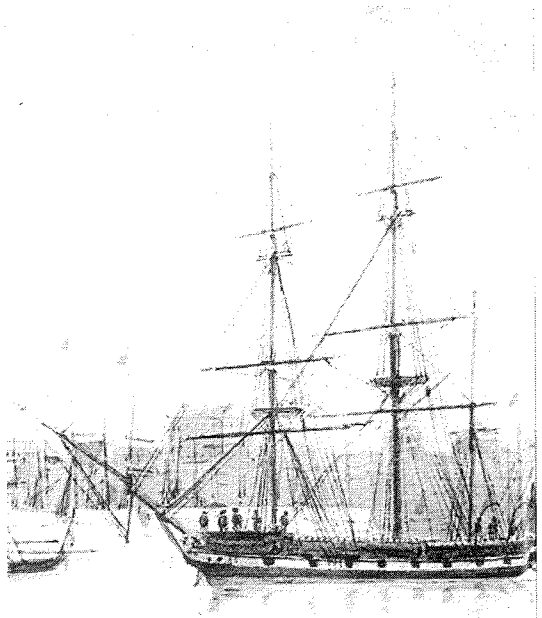
Among those on board the *Beagle* when it visited Australia was its commanding officer, Captain Robert FitzRoy, who later became Governor of neighbouring New Zealand, and who is now remembered as the father of weather forecasting; the person who, among other things, originated the synoptic chart and the publication of daily weather forecasts in newspapers. There was also Lieutenant John Wickham, who commanded the *Beagle* in the initial stages of its third surveying voyage, and who later settled in Australia, becoming magistrate and then Government Resident in Moreton Bay, which is now the city of Brisbane. There was Midshipman Philip Gidley King (Jnr), grandson of a former Governor of the colony, who had been born near Sydney, and who later became a leading figure in the political life of the colony, as a member of the Legislative Council,

Captain Robert FitzRoy at around 30 years of age. A sketch made by Philip Gidley King (Jnr) just prior to or during the Beagle*'s visit to Sydney.*



These postage stamps, both issued in 1979, depict the Waimate Mission House and Christ Church at Russell.

On 30 December 1835, the *Beagle* sailed for Sydney, and Darwin wrote in his journal, "I believe we were all glad to leave New Zealand. It is not a pleasant place. Amongst the natives there is absent that charming simplicity which is found at Tahiti; and the greater part of the English are the very refuse of society. Neither is the country itself attractive. I look back but to one bright spot, and that is Waimate, with its Christian inhabitants" (Darwin 1845; 1889 edition, p.313). Nevertheless, Darwin remained strongly interested in New Zealand for the rest of his life, and he corresponded with many people here. In New Zealand, Julius von Haast FRS named Mount Darwin and the Darwin Glacier, and there are many Darwin streets. In the Victoria Range of Antarctica, two mountains and a glacier are named after Darwin (Tee 2006).



HMS Beagle in Sydney Harbour in 1841, from a watercolour by Captain Owen Stanley FRS (Moorehead 1969, Frontispiece). The figures on the deck indicate the small size of the ship.

In Australia, Darwin visited Sydney, Bathurst, Hobart and Albany. On 14 March 1836, when the *Beagle* left Australia, Darwin wrote in his journal, "Farewell, Australia! you are a rising child, and doubtless some day will reign a great princess in the South; but you are too great and ambitious for affection, yet not great enough for respect. I leave your shores without sorrow or regret" (Darwin 1845; 1889 edition, p.328).

Darwin's letters

A comprehensive scholarly edition of *The Correspondence of Charles Darwin* is being published by Cambridge University Press under the sponsorship of the American Council of Learned Societies, in co-operation with Cambridge University Library and the American Philosophical Society. The Editors have more than 15,000 letters (or copies) to and from Darwin, and those can be searched online at the Darwin Correspondence Project website http://www.darwinproject.ac.uk/. That includes edited transcripts of the letters up to 1869, with work continuing on later letters. Volume 1 was published in 1985, and Volume 21 (for 1873) was published in 2014. I have sent to the Editors copies of about 50 letters from or to Darwin which I have found in New Zealand. Several of those had been published here in newspapers, pamphlets or books; but they had remained practically unknown outside New Zealand. Also, I have found about 20 letters from Darwin in Australia, a few in the British Library and one in Cambridge University Library (in addition to those known to the Editors), one in Paris, and 17 in the Mittag-Leffler Institute of Mathematics at Djursholm, Sweden. Anyone who knows of further letters from Darwin, or to him, is invited to send details to me, for forwarding to the Editors of *The Correspondence of Charles Darwin*.

The correspondents

Some of the people on the *Beagle* corresponded with Darwin for many years. In addition to Captain FitzRoy there were Lieutenant Bartholemew James Sullivan (1810-1890), the Midshipmen John Lort Stokes (1812-1885), Arthur Mellersh (1812-1894), Philip Gidley King (1817-1904), John Edward Davis (1815-1877), the marine Thomas Burgess (1810/1811-1882), and Darwin's servant Syms Covington (1816?-1861).

Visitors to New Zealand

Many visitors to New Zealand corresponded with Darwin, but not while they were here.

Samuel Stutchbury (1798-1859) was the naturalist on a pearling expedition to the Tuamotu Islands, which called in 1826 at the Bay of Islands (Branagan 1996). There he drew the first geological section in New Zealand, and he collected the type specimen of a common cockle, which got the taxonomic name *Chione stutchburyi*. In the 1840s he was a geologist in the New South Wales Geological Survey, and he loaned to Darwin his very large collection of barnacles. Darwin acknowledged Stutchbury's valuable assistance in his classic treatise *A Monograph on the Sub-Class Cirripedia* (2 vols. 1854), and he presented both volumes to Stutchbury. Darwin wrote to Stutchbury's wife (22 August 1854), telling her of his arrangements for returning that collection.

Philip Parker King FRS (1791-1856) was one of the first people born on Norfolk Island. His father Philip Gidley King (Senior) was Governor of that penal colony, and in 1799 he became the third Governor of the penal colony New South Wales. P. P. King explored much of Australia, and from 1826 to 1830 he commanded the expedition of HMS *Adventure* and HMS *Beagle* to chart the southern coasts of South America. He took his son Philip Gidley King (1817-1904) as a midshipman on the *Beagle* - at the age of 9 (!). Darwin had discussions with P. P. King when preparing for the second voyage of the *Beagle*. On that voyage Philip Gidley King was a young midshipman, and he formed a lasting friendship with Darwin. In January 1836 Darwin rode from Sydney to Bathurst, where he wrote a letter to P. P. King on 21 January 1836 about his planned visit, and during Darwin's return to Sydney he stayed with P. P. King at Dunheved. In December 1838 and January 1839 P. P. King commanded HMS *Pelorus* on a visit to Norfolk Island and to New Zealand, where he named Pelorus Sound after his ship.

Sir Paul Edmund de Strzelecki FRS (1797-1873) was born at Gluszyna (now part of Poznan), and he became an independent researcher in natural history (especially geology) in many places around the world (especially Australia). He arrived at the Bay of Islands on HMS *Fly* on 17 February 1839, and he examined the geology of that region. He examined some volcanic cones, and he walked to Lake Omapere and Hokianga Harbour. He sailed for Sydney on a trading ship *Justine* on 10 April 1839 April, and arrived on 26 April (Paszkowski 1997, pp.53-57). He made very extensive studies of the geology of eastern Australia until 1843. Many places in Australia (and a harbour in the Canadian Arctic) are named after Strzelecki, and he named the highest point in Australia as Mount Kosciuszko. In 1844 he settled in England, and his major book on the geology of eastern Australia (Strzelecki 1845) established his scientific reputation. He sent a copy of that book to Darwin, who replied on 25 May 1845, and warmly complimented Strzelecki on his achievement.

Dr Ernest Dieffenbach (1811-1855) was born at Giessen, and in 1837 he arrived in England as a political refugee. He became a friend of several scientists, while earning a precarious living by translating scientific articles. In 1839 the New Zealand Company appointed him as Naturalist, and in May 1839 he sailed for New Zealand on the Company's ship *Tory*. Dieffenbach's appointment appears to have been supported by Darwin. Dieffenbach was the first trained scientist to live and work in New Zealand for an extended period (1839-1841), and he travelled very extensively around New Zealand, including Mount Taranaki, Lake Taupo, Rotorua and the Chatham Islands. His important book (Dieffenbach 1843) gave a very detailed scientific study of New Zealand, including geology and biology, with penetrating and humane accounts of the Maori people. His candid account of the settlers (many of them clients of the New Zealand Company) did not endear him to his employers. He translated Darwin's *Journal of Researches* into German, in close collaboration with Darwin, and he added some notes about New Zealand and the Chatham Islands. Thirteen letters from Darwin to Dieffenbach are known, from 1843 to 1847, almost all of them devoted to the German translation and its publication in 1844. In the second edition of *Journal of Researches*, Darwin cited 2 of Dieffenbach's notes to his German translation (Darwin 1845). In 1848 it was possible for Dieffenbach to return to Giessen, and he became Associate Professor of Geology at Giessen University. He died of typhus in 1855 (Bell 1976). Dieffenbach Point on Arapawa Island, Dieffenbach Cliffs on Mount Taranaki, Mount Dieffenbach on Chatham Island and a street in Opunake are named after him (Tee 2006).

Lieutenant Charles Wilkes (1798-1877) was appointed in 1836 to command the United States Exploring Expedition, which explored much of the Pacific, Indian and Antarctic oceans from 1838 to 1842. In 1836 he consulted Charles Darwin for advice about organizing that Expedition, and Darwin wrote to Wilkes on 7 November 1836, inviting him to a detailed discussion at Long's Hotel (in London). On 26 December 1839 the Expedition squadron left Sydney to search for a continent in the Antarctic Ocean, leaving the scientists in New South Wales. Those scientists arrived at the Bay of Islands on 24 February 1840 (18 days after the signing of the Treaty of Waitangi), the expedition ship, *Flying Fish,* arrived on 9 March and the *Porpoise* arrived on 26 March. Wilkes arrived on 30 March in his command ship USS *Vincennes*, claiming to have found an Antarctic continent (Viola and Margolis 1985, p.260). When Wilkes's squadron departed for Tonga on 6 April 1840, he echoed the sentiments of Darwin in 1835: "I believe that no person in the squadron felt any regret leaving New Zealand, for there was a want of all means of amusement, as well as of any objects in whose observation we were interested" (Wilkes 1844; vol.2, p.3).

Dr Charles Pickering (1805-1878) was the chief zoologist of the United States Exploring Expedition, and he collected a few botanical and zoological specimens at the Bay of Islands. On 9 January 1850 he sent to Darwin a letter listing 73 plants which he had collected at Tahiti and other islands.

James Dwight Dana FRS (1813-1895) was the geologist and mineralogist on the same expedition, and he examined some scoria cones at the Bay of Islands. Two mountains in the South Island, and streets in Christchurch and Manukau, are named after him (Tee 2006). Dana and Darwin corresponded extensively from 1850 to 1874.

Sir James Clark Ross FRS (1800-1862) commanded the Antarctic Expedition on HMS *Erebus* and HMS *Terror*, organized by the British Association for the Advancement of Science, from 1839 to 1843 (Ross 1847). In 1839 and 1840, Dumont d'Urville and Charles Wilkes were also searching for land in the Antarctic Ocean. When Wilkes was at Hobart he left there a chart for Ross, depicting his discovery of a continent south of the Indian Ocean. In 1840 Ross discovered the Victoria Range of mountains in Antarctica, a volcano which he named Mount Erebus (after his ship), and an immense ice shelf. When Ross reached Hobart in 1841 he saw Wilkes's chart, and snorted "I have just sailed through that continent!" Ross then stayed at the Bay of Islands from August to November 1841. Ross Harbour (Auckland Islands), the Ross Sea, Ross Island and the Ross Ice Shelf are named after him (Tee 2006). Darwin wrote letters to Ross on 27 June and 31 December 31 1847.

Sir Joseph Dalton Hooker PRS (1817-1911) knew Darwin before he joined Ross's Antarctic Expedition (1839-1843) as surgeon and naturalist on HMS *Erebus*, and he took with him a set of proof pages for Darwin's *Journal and Remarks*, which had not yet been published. At the Bay of Islands in 1841 he botanized with Dr Andrew Sinclair (from HMS *Favorite*) and William Colenso FRS, collecting about 300 specimens. He was a major botanist and explorer, who published much about New Zealand plants. He became Darwin's closest friend, and over 1500 letters between them have survived. In New Zealand, James Clark Ross named Cape Hooker (Victoria Land), Hooker Stream (Campbell Island) and Hooker Hill (Auckland Island) after him. In the South Island, Julius von Haast named Mount Hooker and the Hooker Range after Joseph Dalton Hooker, with Hooker Glacier and Hooker River named after his father William Jackson Hooker. Streets in Christchurch and Napier are also named after him (Tee 2006).

Dr Thomas Henry Huxley PRS (1825-1895) left school in Ealing at the age of 10, after 2 years of formal schooling - thereafter, he was largely self-taught. In 1846 he became Assistant Surgeon on HMS *Rattlesnake* commanded by Captain Owen Stanley FRS (1811-1850), on a voyage of surveying and discovery to northern Queensland and New Guinea. At Sydney, Huxley became engaged to Henrietta Anne Heathorn. In 1850 Captain Owen Stanley discovered in New Guinea the great mountain range, which is named after him. Stanley Point in Waitemata Harbour is also named after him (Tee 2006). Very soon after HMS *Rattlesnake* anchored at Sydney, Captain Stanley died in Huxley's arms, and he was given a State funeral. The *Rattlesnake* then sailed east to return to England, but the ship got damaged in a storm and so it arrived on 17 May at the Bay of Islands, where it was repaired within a week. On 18 May 1850, Huxley followed in Darwin's footsteps to the Waimate Mission, which he reached at night. He had a letter of introduction to somebody there, but that person was not able to take him in. However, a missionary couple Mr. and Mrs. Burrows generously took Huxley in for the night, and Huxley wrote to his fiancee an account of their hospitality: "tea unlimited and a

blazing fire, together with a very nice cat!" (Huxley 1903; vol.1, p.76). Like Darwin, he borrowed a horse the following day, to return to the Bay of Islands. Huxley's researches on *medusae* during that voyage on HMS *Rattlesnake* gained him in 1850 his FRS, and in 1851 he was awarded the Royal Society Medal for his researches and elected to the Council of the Royal Society of London. When Huxley read Darwin's theory of natural selection in *On the Origin of Species*, he exclaimed "How very stupid of me not to have thought of that!" Huxley and Darwin became close friends, and the combative Huxley appointed himself to be "Darwin's bulldog", defending his revered master from those curs who were snapping at his ankles. Haast named Mount Huxley, Huxley River and Huxley Glacier, and several streets in New Zealand are named after Thomas Henry Huxley (Tee 2006).

Ferdinand von Hochstetter (1828-1884) was a German geologist, who spent much of his career in Vienna. He was appointed to the worldwide scientific expedition (1857-1859) of the Austrian frigate *Novara*, and in 1856 he consulted Darwin for advice about the expedition. The *Novara* reached Auckland in October 1858, and the Auckland Provincial Government borrowed Hochstetter to survey the local geology. He invited Haast to assist him, and they worked together in New Zealand for 9 months. Thereafter, Hochstetter published much valuable material about New Zealand geology. On 26 March 1868, Hochstetter thanked Darwin for his advice and sent him a 2-volume account of the Novara expedition, and Darwin thanked him on 31 March 1868. On 14 February1877, Darwin sent to Hochstetter his thanks to an anthropological society for sending birthday greetings to him. In the South Island, Haast named Hochstetter Cave, Lake Hochstetter and Hochstetter Glacier (in Westland) after his mentor, and Haast's assistant, Alexander McKay, named Mount Hochstetter. In Tasman National Park the German zoologist and pioneering mountaineer Robert von Lendenfeld (1858-1919) named Hochstetter Dome, Hochstetter Glacier and Hochstetter Icefall after Hochstetter (Tee 2006).

Karl von Scherzer (1821-1903), an ethnographer, was the Principal Scientist on the *Novara* expedition, and he became the Austrian General Consul in London from 1875 to 1878. In his *Narrative* of the expedition he acknowledged the valuable advice about the expedition which he had been given by several British scientists, including Darwin. In 1867 he sent to Darwin a book with anthropometric data collected on the *Novara* expedition, and they continued to correspond until 1879.

Henry A. Head met in California either Sir George Howard Darwin (1845-1912, 2nd son of Charles Darwin) or Sir Francis Darwin FRS (1848-1925, 3rd son of Charles Darwin), when they made an extensive tour of the USA in 1871. On 18 September 1872, Head wrote to Darwin from Duluth (Minnesota), reminding Darwin that he had once walked from Beckenham Railway Station to Darwin's home at Down, where Darwin had kindly greeted him. He told that he was working at labouring jobs in Minnesota, and made some remarks about natural history at Duluth. In particular, he compared the local nettle with the New Zealand nettle and with the English nettle; and he told that the local flag rush seemed to be identical with the bullrush called Raupo by the Maories, which he had seen growing throughout New Zealand. Both the Maories and the local Ojibway tribes used these bullrushes for thatching their houses. On 27 February 1873, he thanked Darwin for his kind note, told that he was leaning toward spiritualism, and discussed limits of natural and sexual selection. Working at Duluth in mid-winter was very unrewarding - Head had travelled around the world three times, and now he intended to go round yet again.

Charles Wyville Thomson FRS (1830-1882) promoted a major expedition to study the ocean, especially the deep ocean. Accordingly, the Royal Society of London organized the expedition of HMS *Challenger* (1872-1876), which founded the science of oceanography. Thomson was the chief scientist for the expedition, which collected many thousands of specimens, and tens of thousands of pages of scientific results were published. The *Challenger* came to New Zealand in June 1874, visited d'Urville Island, Queen Charlotte Sound and Wellington, and early in July 1874 it departed to Tonga. Thomson corresponded with Darwin from 1870 to 1878.

Henry Nottidge Moseley FRS (1844-1891) was a naturalist on the *Challenger* expedition. He corresponded extensively with Darwin from 1876 to 1882.

Alexander Randall Carrington (1848-1920) was born at Swainswick in Somerset. In 1867 he came to New Zealand and worked as a field surveyor for the Auckland Provincial Government for about 5 years, and then returned to England. In 1879 he published a pamphlet as a guide for emigrants to New Zealand (Carrington 1879). On 15 November 1880, when Carrington was a Lecturer on Field Engineering at the Royal Agricultural College in Cirencester, he wrote a letter to Darwin about the statement (in *The Origin of Species*) that New Zealand had no frogs. Carrington reported that when he was with a survey party in very rugged mountain territory near Coromandel, he had found in a crevice by a stream a small green frog, whose feet were only partially webbed. In fact, Hochstetter had found such a frog in 1859 under leaf litter, in dense bush on the Coromandel Peninsula. Even the Maoris had not known of frogs. Hochstetter's frog is of much interest to zoologists, as an unusual type of frog. Carrington appears to have married Annie Louisa Marsack at Devonport on 31 August 1891, and they had a son Hubert Carrington (c.1893-1940). Alexander Randall Carrington died in 1920 at Albertland, Auckland.

Sir Ferdinand Jakob Heinrich Mueller FRS (1825-1896) was a German botanist who became the leading botanist in Australia. He corresponded with Darwin from 1857 to 1874. In 1891 the Australasian Association for the Advancement of Science held its 3rd meeting in Christchurch, with Mueller as the Retiring President of AAAS. In the South Island a mountain, two passes, a glacier and a river are named after Mueller (Tee 2006).

Anne Jane Cupples (1839-1898), a Scottish writer of children's books, was the wife of George Cupples (1822-1891), who was a renowned breeder of dogs. Both were friends of Darwin, who admired Anne's books and gained much useful information from George about breeding of animals. They corresponded extensively with Darwin from 1868 to 1878. They had no children, and after George died Anne came to New Zealand in November 1894, to live with her two sisters at Mosgiel.

Leonard Darwin (1850-1943), 4th son of Charles and Emma Darwin, was a military engineer who served on several scientific expeditions. He was appointed as photographer to the 1874 British expedition which came to Canterbury to observe the Transit of Venus. During the voyage Leonard wrote a journal in the form of a long letter to his mother, which concluded with accounts of Lyttelton and Christchurch, and of the grand reception of the expedition by the Philosophical Institute of Canterbury. Unfortunately, clouded skies prevented any observations being made of that Transit of Venus.

Numerous scientists who corresponded with Darwin but never came to New Zealand are commemorated here by mountains, glaciers, rivers, etc. named after them: Jean Agassiz FRS, David Thomas Ansted FRS, William Buckland FRS, William Branwhite Clarke FRS, Henry Thomas de la Beche FRS, James David Forbes FRS, Ernst Haeckel, John Herschel FRS, William Jackson Hooker FRS, William Hopkins, Alexander von Humboldt FRS, Joseph Beete Jukes FRS, John William Lubbock FRS, Charles Lyell FRS, Gideon Algernon Mantell FRS, Hugh Miller, Roderick Impey Murchison FRS, Richard Owen FRS, George Peacock FRS, Andrew Crombie Ramsay FRS, Edward Sabine PRS, William Henry Smyth FRS, Eduard Suess FRS, John Tyndall FRS and William Whewell FRS (Tee 2006).

Letters from Darwin brought to New Zealand

The vast Mantell Collection in the Alexander Turnbull Library has three letters from Darwin to the famous discoverer of dinosaurs *Dr Gideon Algernon Mantell* FRS (1790-1852). As Secretary of the London Geological Society, Darwin thanked Mantell (23 May 1839) for donating fossils from Philadelphia and Cornwall. On 21 April 1843, Darwin told Mantell that he had passed on to Captain FitzRoy his letter enquiring about appointing his son Walter Mantell to some official post in New Zealand; and on 13 May 1843, he wrote that FitzRoy, before departing to New Zealand as Governor, had read Dr Mantell's letter attentively to Darwin and seemed desirous of assisting Walter Mantell. Haast named Mount Mantell after Gideon Algernon Mantell (Tee 2006).

Darwin wrote to the zoologist *William Yarrell* (5 or 12 September 1842) expressing his regrets at not being able to meet *James Ebenezer Bicheno*, and offering to send answers to Bicheno's questions about Van Diemen's Land (Alexander Turnbull Library, autograph album). Darwin's letter to *John Lort Stokes* (3 November 1846), in which he asked Stokes to explain how his recent letter to Stokes commenting (at Stokes's request) on George Grey had been forwarded to Grey, is held in the George Grey Collection at Auckland Central Library (Rees and Rees 1892, Appendix; Grey 1902). Darwin had sent a remarkable letter (9 December 1855) to the ornithologist *Edgar Leopold Layard*, who was then in South Africa, listing many topics in natural history on which he wanted information (George Grey Collection, Auckland Central Library; Grey 1902, where the letter is misinterpreted as written to Grey). Darwin wrote to the entomologist *Frederick Smith* (4 April 1860) about variation in size of bee's cells (Private collection, Auckland). Darwin thanked his publisher *John Murray* (18 May 1860) for sending six copies of the 1860 edition of *Journal of Researches* (Dunedin Public Library, Reed autograph collection); and also (Darwin 2009). That is an Art Press limited edition of a letter from Darwin to John Murray in Dunedin Public Library, and two letters to Dr John Denny in University of Otago.

On 20 December 1862, Darwin thanked *George William Johnson* (editor of the *Journal of Horticulture)* for sending him a strawberry hybrid (Johnson family papers). Darwin thanked *Henry Hussey Vivian* M.P. (11 May 1870) for the interest he had expressed in Darwin's request that census forms include questions about marriage with relatives (Invercargill Public Library, autograph collection). Two of Darwin's three letters to *Dr John Denny* (9 and 22 July 1872) about crossing *Pergalonium* are in the University of Otago (Darwin 2009). Darwin thanked the anatomist *William Kitchen Parker* FRS (20 January 1878, letter in the National Museum in Wellington) for his kind note, and later (20 November 1878, autograph album in Alexander Turnbull Library) invited Parker to lunch.

Long-term residents in New Zealand

Sidney Jenkinson asserted that the amateur botanist *William Thomas Locke Travers* (1819-1905) had reported to Darwin on his studies of hybridization in New Zealand plants. (Jenkinson 1940, p.121) However, that appears to be a confusion with Travers's letters to Joseph Hooker.

Robert FitzRoy FRS (1805-1865)

Darwin and FitzRoy learned to respect each other, during their 5 years on the *Beagle*. At Cape Town in 1836, they published an article in a missionary journal in which they praised highly the work of the missionaries in Tahiti and New Zealand (Darwin and FitzRoy 1836; reprinted in Barrett 1977). The article included excerpts from Darwin's journal, and it was the first publication in his own name. Darwin and FitzRoy had corresponded in England and in South America, and after the voyage they continued to correspond, before and after FitzRoy was Governor of New Zealand. They collaborated closely on writing the official *Narrative of the Surveying Voyages of His Majesty's Ships Adventure and Beagle* (FitzRoy 1839). After Darwin finished his Volume 3 in 1838, he continued editing the 19 instalments of *Zoology of the Voyage of HMS Beagle, under the Command of Captain R. FitzRoy during the years 1832-1836*. In Auckland Central Library, the Special Collections include a luxurious autograph album, compiled and illuminated by the publisher and writer Sir Alfred H. Reed, which he presented in 1935. The album includes a letter written by FitzRoy on 27 January 1839, to the publisher Henry Colburn complaining about the arrangements for proofreading volumes 1 and 2, and informing Colburn that "Mr Darwin complains of not being able to get his proofs sufficiently quick from the Printer". Darwin appears to have corresponded with FitzRoy when he was Governor of New Zealand (1843-1845), but none of their correspondence during that period has yet been found. After Darwin published *On the Origin of Species* (Darwin 1859), FitzRoy denounced him furiously for his atheistical ideas (Mellersh 1968). Port FitzRoy on Great Barrier Island was named after Governor FitzRoy (Tee 2006).

William Colenso FRS (1811-1899)

William Colenso
(photograph by Samuel Carnell 1881, from eColenso v.5 no.2, 20 February 2014)

William Colenso's scientific interests were much stimulated by his discussions with Darwin in 1835, and subsequently he became a renowned botanist and ethnographer (Bagnall and Petersen 1948). There is very little mention of Darwin in that biography, but the authors mention that after Colenso's death, his family destroyed hundreds of letters from many eminent scientists. Soon after Darwin's death in 1882, Colenso delivered a eulogy on "that great and useful man" to the Hawke's Bay Philosophical Institute (Colenso 1882). Darwin's closest friend, the botanist Sir Joseph Hooker, wrote in 1883 to Julius von Haast asking him to sponsor Colenso as FRS, stating that "Darwin would gladly have signed, had he been alive, for he knew Colenso when in the *Beagle*! .... Is this not like going back generations

in the history of Science, and to the very dawn of New Zealand science?" (Haast 1948, p.514; Nathan and Tee 2012).

Walter Baldock Durrant Mantell (1820-1895)

Walter Mantell
(Wikipedia)

Walter Mantell was apprenticed in England to his father, the famous discoverer of the dinosaurs Dr. Gideon Algernon Mantell FRS; but at the age of 19 he ran away to New Zealand, arriving at Wellington on the *Oriental* in 1840. During his subsequent political career he sent important collections of fossils and scientific specimens to England, and he discovered the takahe (*Notornis mantelli*) which had been unknown to the Maori. He corresponded with many scientists, and the vast Mantell Collection in the Alexander Turnbull Library contains several letters from Darwin to Walter Mantell, and three to his father. He wrote to Sir David Monro (Speaker of the House of Representatives) on 15 August 1855: "May I ask you to lend your valuable aid to Charles Darwin who wants information as to the marks if any of glacial action in our islands - especially in our island?" (Wright-St Clair 1969, p.161). In *The Descent of Man, and Selection in Relation to Sex* (2nd edition 1874), Darwin recorded that "I hear from Mr Mantell that, until recently, every girl in New Zealand who was pretty, or promised to be pretty, was *tapu* to some chief" (1909 reprint, p.908). In *The Variation of Animals and Plants under Domestication* (2nd edition 1875), Darwin mentions that "...and the New Zealanders, as Mr. Mantell informs me, kept various kinds of birds" (1893 reprint, vol. 2, p.144).

John Lort Stokes (1812-1885)

John Stokes
(portrait by Stephen Pearce, lithographed by J. A. Vintner [Hocken Library]; Natusch 1978, Frontispiece)

HMS *Beagle* charted the tropical coast of Australia and was commanded from 1837 to 1841 by John C. Wickham with John Lort Stokes as Lieutenant and Assistant Surveyor (both men were on the two previous voyages of the *Beagle*). Near the northernmost point of Australia on 9 September 1839, the *Beagle* discovered a large harbour with interesting geology "which afforded us an appropriate opportunity of convincing an old shipmate and friend, that he still lived in our memory; and we accordingly named this sheet of water Port Darwin" (Stokes 1846, vol.2, p.6). Later the town of Darwin was established there. Wickham's health broke down in 1841 and Stokes replaced him as the Beagle's commander from 1841 to 1843. From 1848 to 1851, Stokes commanded HMS *Acheron* on its mission to chart the New Zealand

coast (Natusch 1978). The result was a set of superb coastal charts, some of which were still being used near the end of the 20th century.

Sir George Grey (1812-1898)

Sir George Grey 1854
(portrait in conté and chalk by George Richmond; from McCormick 1961)

George Grey had intense interest in science, especially linguistics, geology, biology, mathematics and physics. He corresponded with many scientists; he was a friend of Charles Babbage FRS and of Sir Charles Lyell FRS, and he was a close friend of Charles Darwin from their early years (Rees and Rees 1892, chapters 10, 38, 59; Grey 1902; Tee 1990; Kerr 2006). Grey told his biographer, James Collier, that when visiting London in 1837 he used to walk the streets with Darwin at night engaged in animated discussion (Collier 1909, pp.176-177). Darwin's account of his voyage on the *Beagle* inspired Grey to explore northwest Australia, and in 1837 he set forth in Darwin's old cabin on the *Beagle*, initially commanded by John Wickham and later by John Stokes (Milne 1911, p.67). Grey corresponded with the eminent palaeontologist Sir Richard Owen FRS, sending him moa bones and many other scientific specimens. Owen wrote on 8 May 1839, to Grey who was then exploring northwest Australia that "Darwin's work on the *Zoology* has gone on steadily. All the mammalia, many of the birds and three fasciculi of the fossils are now described" Owen complained that Darwin's *Journal and Remarks* (FitzRoy 1839, vol.3), which had been printed in 1838, had still not been published (Owen 1839. One of a long series of excerpts from letters to Grey published in the *New Zealand Herald* between 1900 and 1902).

In 1846, when Grey was Governor of New Zealand, he opened a parcel of books from his London publisher and was much surprised to find enclosed letters between John Stokes and Darwin, in which Darwin had commented (at Stokes's request) on disagreements between Stokes and Grey concerning their explorations in northwestern Australia. Feeling understandably puzzled by this, Grey sent the letters to Darwin on 10 May 1846, with a polite note of inquiry. Darwin was mortified by the embarrassing revelation and wrote to Grey (10 November 1846), apologizing for his inadvertent involvement in the dispute, and regretting that the incident might result in the end of communication between them. Grey's reply must have been reassuring, since Darwin's long letter to Grey (13 November 1847) warmly thanked him for his generous attitude, and especially his invitation to Darwin to call upon him for any assistance which he could provide for research into natural history. Acting upon that invitation, Darwin asked Grey to dig for moa bones in the limestone caves at Waiomio (which Darwin had examined on 26 December 1836), and also to keep an eye open for any "erratic boulders", as geologists were then engaged in a prolonged debate over whether such boulders had been transported by glaciers or on icebergs. When Darwin received Grey's letter enclosing the letters between himself and Stokes, he sent a polite but firm enquiry to Stokes (3 November 1846).

Stokes responded with a blustering reply (6 November 1846), concluding, "I shall endeavour to find the mischief maker". Later, Stokes claimed that Darwin's original letter (responding to Stokes's request) had been inadvertently sent to his printers with proof-sheets. That confusing correspondence between Stokes, Darwin and Grey is archived in the George Grey Collection, Auckland Central Library. It was published in an Appendix in Rees and Rees (1892), in the *New Zealand Herald* (Grey 1902), and in *The Correspondence of Charles Darwin.* Later, when the *Acheron* charted the coast of New Zealand between 1848 and 1851, Governor Grey and Captain Stokes collaborated without difficulty on that important project (Natusch 1978, pp.60, 93).

Grey collected letters from eminent scientists, and when he was Governor of Cape Colony he acquired a remarkable letter which was sent by Darwin on 9 December 1855, to the ornithologist Edgar Leopold Layard who was then in South Africa, listing many natural history topics on which he wanted information. Until 1858, Darwin confided his doubts about the fixity of species to very few of his closest friends, and yet in that 1855 letter to Layard he wrote blandly that: "have for many years been collecting all the facts and reasoning which I could in regard to the variation and origin of species" (!). This seems to be one of the earliest occasions when Darwin wrote that memorable last phrase. The letter is in the *George Grey Collection* in Auckland Central Library and was printed in (Grey 1902), wrongly identified as a letter from Darwin to Grey. In 1846, the explorer and artist Charles Heaphy named the Grey River, and in 1854 a new settlement in the Wairarapa was named Greytown, both in honour of Governor Grey.

Dr Andrew Sinclair (1794-1861)

Andrew Sinclair
(from Newton 1950)[3]

Andrew Sinclair was born in 1794 to a very poor family at Paisley in Scotland. He became a surgeon in the Royal Navy, with intense interest in natural history, especially botany. He gathered natural history specimens at many places around the world, including the Bay of Islands in 1841 (with Joseph Dalton Hooker and William Colenso), and he gave those collections to the British Museum and to Kew Gardens. Consequently, many plants became named after Andrew Sinclair, including 16 plants in New Zealand. At Sydney in 1843 he met Governor Robert FitzRoy, who appointed Sinclair as Colonial Secretary of New Zealand, a post he held from 1844 to 1856. When this position was abolished in 1856, Sinclair retired at 62, went to England where he was elected a Fellow of the Linnean Society, and met many scientists (Glenn 1950, pp.110-113)[2].

In particular, at Joseph Hooker's home he met Charles Darwin (Darwin to Hooker, 22 June 1861), and Darwin sent to Hooker some queries for Sinclair (15 January 1858). Hooker then told Darwin (24 February 1858) that Sinclair had sailed for New Zealand a month previously to collect more botanical specimens, he advised Darwin to write to him at the address "Dr Sinclair, R N, Auckland", and Darwin confirmed to Hooker (28 February 1858)

that "I have written to Sinclair". However, no correspondence between Darwin and Sinclair has been found. In 1861 Sinclair, aged 66, botanized in the Southern Alps with Haast, reaching Mesopotamia Station which Samuel Butler had founded a year previously. Three friends of Darwin were involved in the tragic event on 1861 March 25, when Sinclair tried to ford the Rangitata River and was drowned. His gravestone is preserved at Mesopotamia Station. Darwin commiserated with Hooker on 22 June 1861, about his dying father, and then remarked "And poor Sinclair, whom I saw in your home". Haast named a mountain, a river and a mountain range after Sinclair, and the shortest street in Devonport, Auckland, is also named after him (Tee 2006). In 1867, Sinclair's niece Agnes Sinclair (1826-1884), married Thomas Bannatyne Gillies, who became a founding member of the Council of Auckland University College in 1882. Agnes Gillies died in 1884, and Thomas Gillies then founded the Gillies Scholarship in physics and chemistry (in honour of his wife) and the Sinclair Scholarship in botany and zoology (in honour of her uncle Dr Andrew Sinclair) (Griffey and Tee 2009). Sinclair and Gillies scholarships continue to be awarded annually by the University of Auckland, each lasting for 3 years.

William Swale (1818-1875)

William Swale was a gardener from Norfolk, who came to Christchurch in 1857 where he became a prosperous and prominent nurseryman (Challenger 1979). Immediately after his arrival he wrote two articles which were published in the *Gardener's Chronicle* in England. Darwin had been interested in earlier articles in that magazine that described the introduction of bees into Canterbury, to fertilize introduced plants, and he wrote to Swale asking him for information about those bees. Darwin's letter reached Swale in 68 days. Swale replied with a lengthy and very detailed report (13 July 1858) on introduced plants and bees, with 4 specimens of bees actually stuck onto the letter. Darwin was so impressed by Swale's letter that he published excerpts (with Swale's permission) in two magazines (Darwin 1858). On 20 February 1870, Swale again wrote to Darwin sending notes on the habits of the "American Blight Bird" in New Zealand. A photograph of Swale's shop is reproduced in Challenger (1979).

John Cowell Boys (1824-1881)

John Boys was a founding surveyor in the provinces of Nelson and Canterbury, and from 1854 he was a farmer at Betshanger, near Rangiora. He was a noted breeder of Romney sheep, and a keen advocate of the acclimatization of plants and animals in New Zealand (Scholefield 1940, vol.1 p.84). In 1860, Darwin met Dr Robert Colgate at Eastbourne, and told him of his continuing interest in the European bees which had been introduced into New Zealand to fertilize clover. Colgate invited Darwin to prepare a set of questions about those bees, and Colgate forwarded Darwin's questionnaire to his friend, Boys, in 1860. Boys replied to Colgate on 4 April 1861, and Colgate forwarded this to Darwin on 25 June 1861.

Frederick Wollaston Hutton (1836-1905)

When Darwin published *On the Origin of Species* in 1859, it was greeted with an unprecedented furore of controversy. Frederick Hutton was then a young army lieutenant with an interest in geology, and he was initially skeptical of Darwin's ideas. However, in 1860 he went on a geological excursion with Sir Andrew Ramsay FRS, Director of the Geological Survey of Great Britain, with the result that he became an enthusiastic supporter of Darwin. Hutton sent to Darwin (letter fragment, 8 March 1860) some drawings of insects caught on a ship, and told that he had also obtained a landrail. In 1861, Hutton published an essay review

Frederick Hutton
(from a photograph by E. Wheeler & Son, Christchurch. New Zealand Journal of Science, v.2, 1885)

of *On the Origin of Species* in *The Geologist* which much impressed Darwin, who praised the review in letters to Hooker (23 April 1861) and Edward Cresy (28 May 1861). Darwin also wrote to Charles Lyell, "I am pleased that you approve of Hutton's Review. It seems to me to take a more philosophical view of the manner of judging the question than any other Review" (21 August 1861). Darwin wrote a warmly appreciative letter to Hutton (20 April 1861), thanking him for his lucid analysis of his book, and later he wrote to Hutton (8 December 1864) regretting that he was unable to answer Hutton's questions about albatrosses - both letters are in the Canterbury Museum. Hutton settled in New Zealand in 1866, where he became a prominent geologist and botanist. In 1877 he was appointed Professor of Natural Science at the University of Otago, where his exposition of evolution offended some influential people. The Presbyterian Synod of Otago and Southland ceased funding his Chair, and Hutton applied to the University Council for protection from the Deputy Chancellor, who kept denouncing Hutton in his sermons. Consequently, in 1880 Hutton moved to Christchurch, where he was appointed as Professor of Biology at Canterbury University College. On 12 September 1887 he gave a lecture on "Darwinism" to the Philosophical Institute of Canterbury, in which he quoted with pride the letter which Darwin had written to him 26 years previously. Hutton arranged for his lecture to be privately printed in a very few copies (Hutton 1887), and sent one to the Darwin family. As a result, Darwin's letter thanking Hutton (20 April 1861) was published in *The Life and Letters of Charles Darwin,* in the editions from 1892 onwards (Darwin 1887-1888). In 1899 Hutton re-published his 1887 pamphlet as a chapter in his book (Hutton 1899). In 1902, his Presidential Address to the Australasian Association for the Advancement of Science at Hobart was a resume of his life's work and thoughts on evolution (Hutton 1903). Mount Hutton in the Paparoa Range was named after him (Tee 2006).

Sir Julius von Haast FRS (1822-1887)

Sir Julius von Haast
(Haast 1948, Frontispiece)

Julius von Haast was born in Bonn, and arrived in Auckland on 21 December 1858, to become agent of a shipping company. He wrote a German prose-poem, lamenting that he had achieved nothing and his life was over at the age of 36. The next day the Austrian frigate *Novara* arrived, with Ferdinand Hochstetter as one of the scientists. Hochstetter was invited to make geological surveys for the Provincial Governments of Auckland and Nelson, and he engaged Haast as his assistant. On 2 October 1859, Hochstetter left for Vienna, and the Nelson Provincial Government engaged Haast to make further surveys. Haast explored the very rugged

territory as far south as the Grey River and Lake Brunner, under extremely difficult conditions. In that topographical and geological survey he named many features after scientists, which appear on his 1860 map. Haast's assistant James McKay named Mount Haast. Thereafter, Haast became a renowned scientist with diverse achievements in exploration, geology, glaciology, biology, archaeology, education, etc., etc., (Haast 1948 which includes several letters from Darwin to Haast [most of which are in the Alexander Turnbull Library] and Haast's account of Darwin's work).

From 1861 to 1868 Haast was the Provincial Geologist to Canterbury Province, during which period he explored much of Canterbury and South Westland. He was constantly under attack by politicians, ratepayers and newspaper editors who resented money being wasted on science - the geologist had been appointed to find gold in Canterbury, and he had not done that! Haast continued to name places after prominent scientists – and that proved to be a very effective way to make himself known to scientists throughout the world, and gain their public support. In particular, Haast named Mount Darwin and Darwin Glacier, near Mount Cook. He named Haast Pass and the Haast River after himself, "according to the direction of His Honour, the Superintendent" (Tee 2006).

Haast founded the Philosophical Institute of Canterbury on 30 August 1862, and in his Inaugural Address he extolled Darwin's theory of evolution as one of the greatest of all scientific advances. He sent a printed copy of that Address to Darwin, thereby opening a friendly correspondence which continued for the rest of Darwin's life. In the 6th edition of *The Origin of Species,* Darwin wrote, "We know, from the excellent researches of Dr. J. Haast and Dr. Hector that in New Zealand immense glaciers formerly descended to a low level" (1901 reprint, p.523). Darwin wrote to Haast that "the extent to which science is cultivated in New Zealand always excites my admiration" (1 November 1879, letter in Auckland Museum Library). Haast was much esteemed by scientists around the world - including many whose names he had put on the map of New Zealand.

Edward Cephas John Stevens (1837-1915)

Edward Stevens
(Wikipedia)

Edward Stevens was born at Salford in Oxfordshire, and was educated at the Royal Agricultural College in Cirencester. He emigrated to Canterbury, New Zealand, in 1858 where he was active in business, politics and education. As Secretary of the Philosophical Institute of Canterbury he wrote to Darwin (14 September 1863), informing him that the Institute (which Haast had founded a year previously) had unanimously elected him an Honorary Member on 7 August of that year.

Samuel Butler (1835-1902)

Samuel Butler was a grandson of Darwin's Headmaster at Shrewsbury School, Bishop Samuel Butler (1774-1839), where Darwin had learned to despise him. The parents of Samuel Butler (1835-1902) were the epitome of Victorian respectability - and so in 1860 he came to Canterbury, New Zealand, to get away from them, and to make money. He explored the

Samuel Butler in Christchurch 1862
(Butler 1964, Frontispiece)

Southern Alps and found grazing land between the Rangitata River and Forest Creek, where he established his sheep station *Mesopotamia* (Greek for "between the rivers"). He made money from sheep-farming there and returned to England in 1864 (Butler 1964; Newton 1960). Butler wrote several articles for the Christchurch newspaper *The Press* (founded in 1861), beginning on 20 December 1862, with "Darwin on the Origin of Species: a Dialogue", in which he supported Darwin's work. Somebody sent a copy to Darwin who was much pleased by it, and he forwarded it to an editor (24 March 1863), with the suggestion that he might wish to reprint it in his journal: "It is, also, remarkable from being published in a Colony exactly 12 years old, in which, it might have thought, only material interests would have been regarded". Darwin wrote to Haast (18 July 1863), saying that he wondered whether Haast was the "Author of a very amusing and really excellently done dialogue on Natural Selection, in a New Zealand paper, which was sent to me?" Butler's "dialogue" sparked the beginning of a lengthy controversy in *The Press*, with Butler defending Darwin against the scornful derision of Bishop Abraham of Wellington.

Butler's early writings are readily available in his collected works (Butler 1923, vol. 1). These include his articles in *The Press* on "Darwin on the Origin of Species", "Darwin among the Machines" (13 June 1865), and "Lucubratio Ebria" (29 July 1865, sent from England with a covering letter to the Editor asking, "Is not the subject worked out, and are not the Canterbury public sick of Darwinianism?" [Anonymous 1961]). That centennial history of *The Press* reprints excerpts from Darwin's articles and the ensuing controversy over Darwin. In Butler's letter with "Lucubratio Ebria", the final phrase was softened to "tired of Darwinism?" (p.54). His essay on "Darwin among the machines" evolved into *Erewhon*, which still remains as the major philosophical and literary work written (mostly) in New Zealand (Butler 1923, vol. 2). "Darwin among the machines" and "Lucubratio Ebria" were reprinted in in the Jubilee issue of *The Press* (25 May 1911). Butler's friend and biographer, Henry Festing Jones, published a long letter in *The Press* (1 June 1912), mentioning that he had bought the letter which Darwin had written to an editor (24 March 1863) about some earlier article by Butler (which was "Darwin on the Origin of Species"). Jones presented the letter to the Canterbury Museum and published its text within his own letter; excerpts from it having been previously published in a bookseller's catalogue. Jones published for the first time (within his letter) several early letters between Butler and Darwin. As a result of Henry Jones's letter, "Darwin on the Origin of Species" was re-discovered and reprinted on 8 June 1912, with much of the ensuing correspondence being reprinted on 11 June 1912. Butler became a personal friend of Darwin after he returned to England, and although in later years a trivial misinterpretation led him to

pick a one-sided quarrel with Darwin (who reacted with baffled silence), he always accepted the fact of evolution (Jones 1911). Jones's very thorough biography of Butler contains a detailed study of the relations between Darwin and Butler, printing many letters between them and others (Jones 1919). Chapters 6 and 7 cover Butler's period in New Zealand, discussing the Darwinian essays. Many computer scientists have acclaimed *Erewhon* as a profound study of the relations between man and machines, and some biologists have praised Butler's biological writings (inspired by the German physiologist Ewald Hering) as significant pioneering studies of genetics.

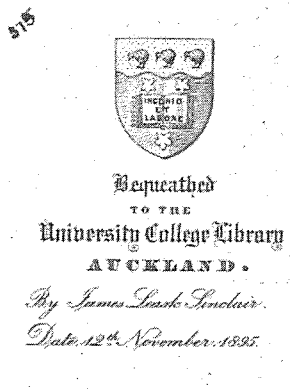
James West Stack (1835-1919)

James Stack
(Stack 1935, Frontispiece)

James West Stack was born in a pa at Puriri on 27 March 1835, and he became one of the leading missionaries in New Zealand. Darwin wrote to Haast (27 February 1867), listing some questions about the ways in which emotions get expressed in various human societies. Haast asked Stack to supply answers to those questions and Stack agreed, since he respected Darwin as a scientist even though he could not bring himself to accept Darwin's ideas on evolution. Darwin asked Haast (28 January 1868), to give Stack his most cordial thanks for his information about the Maoris: "Though the answers are few they are decidedly the best & clearest I have received from any quarter" (Stack 1935, p.64; Haast 1948, p.515). In February 1873, Stack was surprised and pleased to receive from Darwin an inscribed copy of his treatise on the expression of emotions (Darwin 1872). In that book, Darwin related that "In regard to the Maoris of New Zealand, the Rev. J. W. Stack has answered only a few of my queries; but the answers have been remarkably full, clear and distinct with the circumstances recorded under which the observations were made" (Stack 1935, p.65).

James Leask Sinclair (1829-1895)

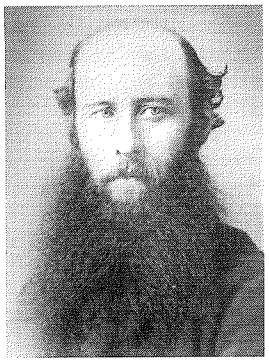
James Sinclair was born in 1829 at Kirkwall in the Orkney Islands, and came to Auckland in 1865. He worked as a journalist for the *Southern Cross* and published many articles on astronomical topics. He wrote a letter to Darwin about mental development (22 December 1869) sent via Darwin's publisher John Murray, and then wrote another such letter directly to Darwin (31 December 1869). In 1878, Sinclair became a teacher in Wellington, and later taught at Newton West School and then at Ardmore School. His daughter Mary Muir Sinclair graduated M.A. (N.Z.) at Auckland University College in 1890 – ten years after Helen Connon at Canterbury University College became the first woman M.A. in the British Empire. Sinclair died at Otahuhu on 12 November 1895, and the *New Zealand Herald* published Sinclair's death notice on 14 November, followed by an obituary on 16 November. That article reported that he had anonymously published a book of *Orcadian Rhymes* at Kelso (south-east Scotland) in 1864. Sinclair bequeathed his large library to Auckland University College: the professors selected 580 books for the library (which was founded in 1890), and the other books were auctioned. Some rare and valuable scientific books now in the University of Auckland Library bear a bookplate of the Sinclair bequest. This bookplate comes from the very first biography of Charles Darwin (Bettany 1887).



Bookplate of James Leask Sinclair (in Bettany 1887)

Two important volumes of mathematics, both sumptuously printed in folio at the Sheldonian Theatre (Oxford), also bear Sinclair bequest bookplates: John Wallis's *A Treatise of Algebra* (1685), and Euclid's *Euclides Quae Supersunt Omnia* edited by James Gregory in Greek and Latin (1703). Darwin appears to have replied to Sinclair's letters, but none have been found. After very extensive searches, I managed to contact an aged man who had been the solicitor for Sinclair's two daughters, and who was then (in 1981) solicitor for a great-grandson of James Sinclair. He was surprised and intrigued that I was enquiring about his long-ago clients, the Misses Sinclair. But when I explained that I was searching for letters to James Leask Sinclair from Charles Darwin, the solicitor became very hostile and refused any further communication!

Frank Walter Churchill Simmons (1829-1876)

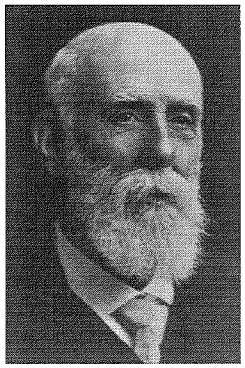


Reverend Frank Simmons was the Principal of Nelson College from 1868 to 1876. In *The Descent of Man*, Darwin had stated that Maoris did not admire beards on men (Darwin 1871). Simmons wrote to Darwin (10 December 1871), explaining that he had a prominent beard, and many Maoris had complimented him on his fine beard. Accordingly, Darwin wrote in the second edition (1874, p.349) that Maori attitudes to beards were now changing.

Frank Simmons (Nelson College)

Thomas Frederick Cheeseman (1846-1923)

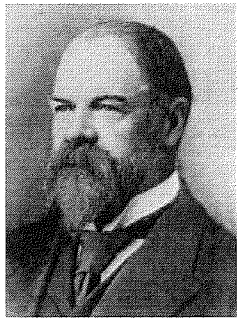
Thomas Cheeseman was born at Hull and in 1852 he came to Auckland where he headed the Auckland Institute and Museum for the last 49 years of his life. He was stimulated to study New Zealand orchids by reading the first edition (1862) of Darwin's monograph on the fertilization of orchids. In 1872, he published his account of the singularly bizarre mode of fertilization indulged in by *Pterostylis* orchids, and sent to Darwin (7 June 1873) a copy of that paper (Cheeseman 1872). Darwin responded (4 September 1873), telling Cheeseman "I thank



Thomas Cheeseman (Wikipedia)

you for your extremely interesting paper - I can entertain no doubt that your explanation is correct, as your account is clear". In the second edition of Darwin's monograph he described the fertilization of *Pterostylis trullifolia*, and stated that "All that I have here said is taken from the admirable description given by Mr. Cheeseman" (Darwin 1877, p.88). Darwin also described in detail Cheeseman's paper on *Acianthus* and *Cyrtostylis* (Cheeseman 1874): "Mr. Cheeseman has witnessed the fertilisation of *Acianthus sinclairii* in New Zealand, the flowers of which are incessantly visited by Diptera, without whose aid the pollinia are never removed. Out of eighty-seven flowers borne by fourteen plants, no less than seventy-one matured capsules. This plant according to the same observer exhibits one remarkable peculiarity, namely, that the pollen-masses are attached to the rostellum by means of the exerted pollen-tubes, which serve as a caudicle; and the pollen-masses are thus removed together with the rostellum, which is viscid, when the flowers are visited by insects. The flowers of the allied *Cyrtostylis* are also much frequented by insects, but the pollinia are not so regularly removed as those of the *Acianthus*; and with *Corysanthes*, only five out of 200 flowers produced capsules" (Darwin 1877, p.90). Cheeseman wrote to Darwin (23 October 1877) about fertilization of *Glossostigma*, enclosing his paper on the fertilization of *Selliera* (Cheeseman 1876). Darwin was so impressed by Cheeseman's paper and letter that he promptly published the letter in *Nature* (27 December 1877, vol.17, 163-164). Francis Darwin replied to Cheeseman (12 December 1877) on behalf of his father thanking Cheeseman for sending his paper. He explained that the letter about *Glossostigma* had interested his father so much that he had forwarded it to *Nature*, and he hoped that Cheeseman would not be offended by not waiting to obtain his authorization (it seems unlikely that Cheeseman was offended by Darwin's action). Although other letters from Darwin to Cheeseman were kept in the Auckland Institute and Museum, they disappeared several decades ago. In 1931, Robert Speight named Mount Cheeseman after Thomas Cheeseman, and a volcanic islet in the Kermadec Islands was also named after him (Tee 2006).

Sir Walter Lawry Buller FRS (1838-1906)



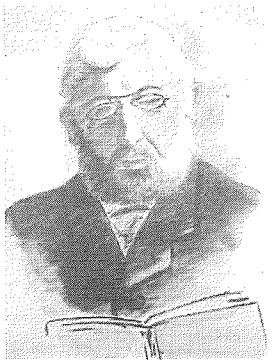
Walter Lawry Buller was born at the Bay of Islands in 1838, and he became the leading ornithologist of New Zealand. The first edition of his magnificent book on the birds of New Zealand was published by subscription in 1875, with Darwin as a subscriber (Buller 1875). In 1879, Darwin was a sponsor for Buller as FRS - he was the first Fellow who had been born in New Zealand.

Sir Walter Buller (Wikipedia)

Albert Duncan Austin (1839-1903)

Albert Austin was born in London, and in 1855 emigrated to Nelson. As a surveyor and engineer he worked very extensively on constructing roads, railways and buildings throughout the South Island. He was elected a Fellow of the Royal Astronomical Society in 1875, and a member of the Institution of Civil Engineers in 1878 (Anonymous 1903). He wrote to Darwin (6 November 1877) from Invercargill, telling of his experiments in using a stereoscope viewer to view photographs of two different people, and perceiving a face which blended the faces of those two people. He suggested that such a technique could be useful in studies of expression of emotions, and that it might aid understanding of relationships between various animals, and between various types of humans. Darwin passed Austin's letter on to his cousin Sir Francis Galton FRS, who was then conducting similar experiments on composite portraiture. Galton was greatly surprised and pleased by Austin's letter, and he published it in a Memoir read before the Anthropological Institute in 1878: "The stereoscope, as I stated last August in my address at Plymouth, affords a very easy method of optically superimposing two portraits, and I have much pleasure in quoting the following letter, pointing out this fact as well as some other conclusions to which I also had arrived. The letter was kindly forwarded to me by Mr. Darwin; it is dated last November, and was written to him by Mr. A. D. Austin, from New Zealand, thus affording another of the many curious instances of two persons being independently engaged in the same novel inquiry at nearly the same time, and coming to similar results" (Galton 1883, pp.226-227). Darwin's botanical researches involved the investigation of some dimorphic plants (whose form changes markedly during growth), and Austin wrote from Invercargill to Darwin (25 July 1878), describing some dimorphic plants in New Zealand.

Dr Thomas Morland Hocken (1836-1910)



Thomas Hocken was an English doctor who settled in Dunedin in 1862, becoming an important bibliographer and collector of books and ethnographic material (McCormick 1961). In 1880, the *Otago Institute* celebrated the 21st birthday of *On the Origin of Species* by sending to Darwin an illuminated scroll, which is now displayed at Darwin's home, Down House. In Darwin's reply to Hocken (21 February 1881), he wrote that he had always retained a strong interest in New Zealand, and had read "every one of the volumes of The N.Z. Institute from the first" (Glenn 1950, p.61). Darwin's letter is now in the Hocken Library.

Thomas Hocken, charcoal drawing by J. H. Scott
(Hocken Library; McCormick 1961)

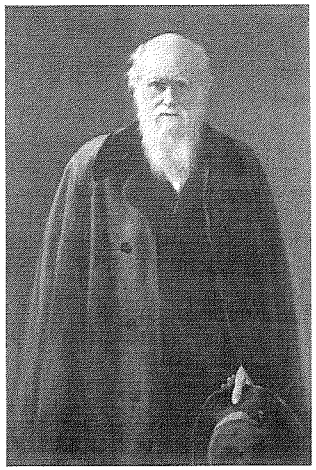
Sir James Hector FRS (1834-1907)

James Hector was a Scottish doctor who became a geologist and explorer, finding the route for the Canadian Pacific Railway to cross the Rocky Mountains. In 1862, he came to Dunedin to be the Provincial Geologist, and subsequently became the director of all governmental scientific activity in New Zealand. James Hector is commemorated in the North Island by Mount Hector, and in the South Island, there are the Hector Mountains, Hector Col, Hector River, Hector's Stream, Lake Hector and a settlement called Hector (Tee 2006).

Sir James Hector
(from Callaghan 1957, Frontispiece)

In 1871 the New Zealand Institute (with Hector as Secretary) elected Darwin as a Life Member. Darwin's letter to Hector (14 May 1872), thanking the Institute is held at National Museum of New Zealand (Te Papa Tongawera) in Wellington. In the 6th edition of *The Origin of Species* (1872), Darwin wrote that "we know, from the excellent researches of Dr. J. Haast and Dr. Hector, that in New Zealand immense glaciers formerly descended to a low level" (1901 reprint, p.523).

Charles Darwin died on 19 April 1882. In January 1891, the Australasian Association for the Advancement of Science held its 3rd meeting in Christchurch. Hector delivered his Inaugural Address on 15 January, summarizing the major scientific advances of the 19th century. He recalled the "puerile and absurd" fables about the fixity of species which had been taught in his young days, and then spoke how "I remember well that I first obtained a copy of Darwin's *Origin of Species* in San Francisco when on my way home from a three years' sojourn among the Red Indians in the Rocky Mountains. Having heard nothing of the controversies, I received the teaching with enthusiasm, and felt very much surprised on returning to my *alma mater* to find that I was regarded as a heretic and backslider. Nowadays it is difficult to realise what all the fuss and fierce controversy was about; and the rising school of naturalists have much cause for congratulation that they can start fair on a well-assured logical basis of thought, and steer clear of the many complicated and purely ideal systems which were formerly in vogue for explaining the intentions of the Creator and for torturing unfortunate students" (Hector 1891).



John Collier's portrait of Charles Darwin, 1884
(National Portrait Gallery)

Notes

[1] Biographical articles about most of Darwin's contacts in New Zealand are given in *The Dictionary of New Zealand Biography* (Allen & Unwin and Department of Internal affairs, 5 vols., Wellington 1990-2000); Vol. 1 (1769-1869) for Walter Lawry Buller, James Busby, Samuel Butler, George Clarke, William Colenso, Ernest Dieffenbach, Robert FitzRoy, George Grey, Julius von Haast, James Hector, Joseph Hooker, Walter Mantell, Andrew Sinclair, James West Stack, Edward Cephas John Stevens, John Lort Stokes and William Williams; Vol. 2 (1870-1900) for Thomas Hocken and Frederick Hutton; Vol. 3 (1901-1920) for Thomas Cheeseman.

[2] Chapter 8 is devoted to Darwin's visit to NZ. His meeting with Colenso is described on p.51, Dr Andrew Sinclair is discussed on pp.110-113, and T. F. Cheeseman on p.162. His letter to Dr. Hocken (as Secretary of the Otago Institute) is quoted on p.61 - that letter is now in the Hocken Library.

[3] There is an article in the University of Auckland alumni magazine, identifying a portrait by Louis John Steele as being painted in 1893 from this photograph of Dr Andrew Sinclair.

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Radiocarbon dating and its role in understanding the geological history of the Melling Fossil Forest, Lower Hutt, Wellington, New Zealand

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Isotope studies received a huge boost from the enormous scientific effort put into the wartime Manhatten Project, leading to the development of the atomic bomb. As a result, after the end of the war a number of laboratories in the United States and Canada inherited expertise and equipment for the study of isotopes. Examples included laboratories at Caltech, University of Chicago and the Massachusetts Institute of Technology (MIT). As part of research programmes, scientists became aware of the possibilities opening up for the use of isotopes for dating and environmental purposes. The first success of isotope geology was the radiocarbon method of dating pioneered by Willard Libby in 1949 at the University of Chicago (Libby 1952).

Athol Rafter (1913-1996), inaugural director of the DSIR Institute of Nuclear Sciences, was a pioneer in the study and application of radioisotopes in New Zealand (Fig.1) (Hulston 1996, 2000). In 1948 Athol was a member of a group of DSIR scientists funded to undertake nuclear research. As part of this research effort, Athol was sent to study at the Massachusetts Institute of Technology (MIT) and at Columbia University, New York. He also visited nuclear research facilities elsewhere in the United States and also in Canada and England. On returning to New Zealand, Athol, along with the physicist Gordon Fergusson, developed a Radiocarbon Facility that very soon achieved international recognition for the quality of its research and output of samples. In 1963-1964 Athol also used his American contacts to develop a laboratory to analyse oxygen isotopes (Stevens in press).

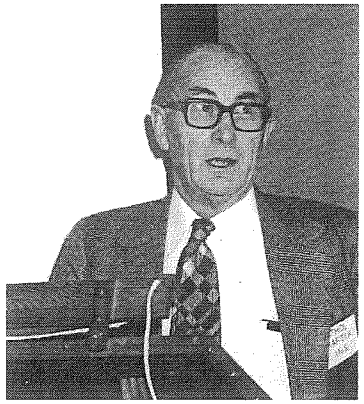

Fig.1. *Athol Rafter, Director of the Institute of Nuclear Sciences, DSIR, 1959-1978.*

The original method used by Willard Libby was based on counting Carbon-14 using solid carbon. However, as this method was so tedious and difficult, Athol and Gordon set about developing a technique using carbon dioxide gas. Use of this technique provided a substantial improvement in the accuracy of radiocarbon age dating (Fergusson 1953; Rafter 1953, 1955). The improved dating method was first used to date moa bones, river terraces and peats. Dates