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GERMAN-SPEAKING SCIENTISTS IN NEW ZEALAND 1773-1951: RESEARCH PAST, PRESENT AND FUTURE¹

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Beginning with Captain Cook's second visit to New Zealand in 1773, German and Austrian scientific visitors have made an outstanding contribution to the advancement of scientific knowledge both in and about this country. In disciplines as diverse as geology, zoology and ethnography (to name just a few), German-speaking scientists have helped lay the foundations for subsequent study, both locally and internationally, in a number of fields of enquiry. Unfortunately, the enormous contribution that German-speaking scientists have made to New Zealand's science history (and indeed to its history in general) in this early period still remains largely unappreciated to this day. The following paper will therefore briefly survey what has been written in New Zealand on the most important German-speaking scientists to have visited or worked in this country between 1773 and 1951, and it will also consider what could be written on them in future, given the large amount of (often unused) material that exists by and on them.

The first German scientists – indeed the first Germans – to set foot in New Zealand were Johann Reinhold Forster (1729-1798) and his son George (1754-1794), who visited this country three times in 1773 and 1774 in their capacity as official naturalists on Cook's second circumnavigation.² In an international context, they remain today the most well-known German scientific visitors to New Zealand. Originally from a corner of Prussia which is now part of Poland, both Forsters became known as Pacific experts in German-speaking Europe in the two decades after their return from the South Seas, but a variety of factors – such as the elder Forster's acrimonious falling out with the British authorities, George's fame as the author of the account of their voyage around the world, and his involvement in the French Revolution – have all conspired to ensure that the younger Forster has been remembered by posterity more than his father. This is especially so in German-speaking Europe, where George is remembered nowadays more for his political radicalism, although the University of Hawaii's recent reprinting of Reinhold Forster's observations made on their voyage, and of George's account of their travels with Cook,³ have done much to re-introduce these important early Pacific visitors to an English-speaking readership.

In New Zealand, the Forsters' contribution to early local science has been mentioned in the scientific literature for close to a hundred years. As far as the biological sciences are concerned, the Forsters have been discussed in standard handbooks such as Cheeseman's *Manual of the New Zealand Flora*;⁴ they have been discussed in specialist studies such as Medway's on-going research into the ornithology of Cook's voyages;⁵ and they have also been discussed in more popular modern surveys such as Sampson's study of early New Zealand botanical art,⁶ and Andrews' history of zoological discovery in New Zealand.⁷ More recently,

the Forsters have also figured in the work of scholars interested in the early anthropology of New Zealand and the Pacific, most notably Anne Salmond in her monograph *Between Worlds*.⁸

In considering the various German-speaking scientific visitors to New Zealand, there are of course occasions where science history and general history tend to overlap. In the case of the Forsters in particular, their historical significance (as opposed to their *scientific* significance) becomes especially apparent in their association with Cook: look at any local publication on the master mariner (and there have been quite a few), and you will more often than not see some reference or other to the two Prussian naturalists. Some assessments of them, particularly the earlier ones, are quite depressing: a notorious example is that provided by J. C. Beaglehole, the doyen of twentieth-century Cook scholarship, who once dismissed the elder Forster as “one of the Admiralty’s vast mistakes”, and George as “a writer of the second rank”.⁹ Other, more recent assessments of the Forsters have been much more complimentary, and have done much to rehabilitate them, especially Reinhold Forster, in both a local and an international context. One thinks immediately of the Begg brothers’ *Dusk Bay* and *James Cook in New Zealand*,¹⁰ but in particular of the numerous works by the late Michael Hoare: these include a biography of the elder Forster¹¹ (still the only one to have been written anywhere), a magnificent edition of his journal,¹² and a long line of articles and lectures that appeared over a period from the late 1960s through to the early 1990s.¹³ With publications such as these, Reinhold Forster has certainly received an impressive (but by no means final) critical evaluation – perhaps, then, it is now time for a New Zealand scholar to consider writing a book-length biography of the younger Forster?

If so, then there is one practice, all-too-common in examinations of the German-speaking contribution to New Zealand’s science history, that an intending biographer needs avoid. This is the tendency, where both English- and German-language versions of the same text exist, for local scholars to use just the English version: an obvious example are the various authors who refer to George Forster’s *Voyage round the World*, but seem to ignore to his *Reise um die Welt*. (The fact that these authors rarely consult other German-language material by the Forsters, such as the Berlin Academy of Sciences edition of George’s collected works¹⁴ – to say nothing of the wealth of secondary literature in languages other than English – is another matter for concern, which can only be noted here in passing). The reason for relying on English-language primary literature in particular is almost certainly one of linguistic necessity (New Zealanders of European origin are notorious for their monolingualism!), but it needs to be remembered that the Forsters wrote in different languages for different audiences, and it may just well be that the texts they intended for their German audience contain certain telling details – or opinions – that were left out of texts intended for their English readers.

The next important German-speaking scientist to visit New Zealand was the Austrian botanist Karl von Hügel (1795-1870).¹⁵ Hügel, who spent several weeks in the Bay of Islands in 1834, came to New Zealand as a “guest scientist” on the British warship HMS *Alligator*. His visit to this country formed one small part of a journey of truly Humboldtian proportions, which, over a period of some five years, took in travels through the Middle East, Asia, India, Australia and the Philippines. His so-called “New Holland Journal”, written in German and recording scientific and general observations made in the eleven months he spent in Australia and New Zealand, alone amounts to some 2,000 handwritten pages.¹⁶ Hügel’s activities in New Zealand are known to have included such things as botanising, collecting ethnographic material, making “shrewd and acerbic” observations about early British administration and missionary activity – not to mention allowing himself to be tattooed on the arm by a Maori priest, so as to be able to describe the process from experimental knowledge.¹⁷ Unfortunately, Hügel’s presence in New Zealand remains almost totally unknown locally to this day; indeed, he has been mentioned in published sources (and always in passing) on less than a handful of occasions over the last thirty years or so¹⁸ – despite the fact that the National Library of New Zealand has possessed a microfilm copy of his “New Holland Journal” since 1972, and a private partial translation of this since 1990.¹⁹ However, an edited translation of the New Zealand section of von Hügel’s journal is currently in preparation,²⁰ and when it appears, it will be interesting to see the extent of Hügel’s contribution to early New Zealand botany and ethnography.

We are in a much more favourable position to consider the activities and contribution of the next German-speaking naturalist to visit this country. Ernst Dieffenbach (1811-1855), a native of Giessen who had been forced into exile for his liberal political views, spent some two years in New Zealand between August 1839 and October 1841 as the official naturalist of the New Zealand Company, the British colonisation company responsible for the first organised migration of European settlers to New Zealand. Dieffenbach was thus the first paid resident scientist to spend any real period of time in this country. He travelled widely throughout New Zealand during his stay, and went on to record his observations and experiences in his two-volume *Travels in New Zealand*, published two years after his return to England.²¹ This account, which includes valuable observations of local flora, fauna, geography and geology, remains one of the most comprehensive and important nineteenth-century monographs on New Zealand. Often critical of some of the recently arrived settlers, and often at odds with his employers as well, Dieffenbach remains important for modern scholars not only as an early scientific observer, but also in a more historical sense as a social commentator: this is especially so given his extensive and often sympathetic observations of Maori at a time when European colonisation

was just beginning. There is still much to be gained – in terms of history, anthropology and ethnology – from his monograph.

For a man who wrote so comprehensively about New Zealand, however, relatively little is known about Dieffenbach himself. The only book-length study on him to have been published anywhere so far is the 1976 biography by Gerda Bell,²² a German-born former tutor at Victoria University in Wellington, who was also a one-time resident of Giessen and a political exile like Dieffenbach.²³ Bell herself conceded that there are still many gaps in our knowledge of this man that need be filled in, if or when more material comes to light.²⁴ One encouraging example of such a discovery – in fact, the *only* discovery so far – can be seen in the editing and publication by Peter Mesenhöller of Cologne of nearly three years' worth of Dieffenbach's correspondence, dating from his exile in the mid-1830s: this correspondence amounts to some 150 printed pages – nearly as long as Bell's entire biography – and also doubles the number of known portraits of Dieffenbach (from one to two).²⁵ Admittedly, these letters contain little that is of direct relevance to his association with New Zealand, but they do provide valuable biographical information on this important early visitor to this country. Unfortunately, the existence of this new material appears so far to be completely unknown locally.²⁶

In December 1858, some seventeen years after Dieffenbach's departure from New Zealand, a young German-born geologist by the name of Ferdinand Hochstetter (1829-1884) arrived in Auckland as a member of the round-the-world scientific expedition of the Austrian frigate *Novara*.²⁷ After conducting a brief assessment of geological features in and around Auckland, Hochstetter remained in New Zealand for a further ten months at the request of the colonial authorities, and during this period conducted a number of important initial surveys of various geological features in the central North Island and the north of the South Island – an achievement for which he is remembered nowadays as “the Father of New Zealand Geology”. Although a geologist first and foremost, Hochstetter's scientific interests were in fact quite wide-ranging, and, as is apparent from his subsequent publications on New Zealand, extended into disciplines such as botany, zoology and ethnology. All in all, Hochstetter produced some twenty publications with a New Zealand theme.²⁸ By far the most important of these was his account of this country, entitled *Neu-Seeland*, which appeared some four years after he returned to Austria.²⁹ Much like Dieffenbach's *Travels in New Zealand* before it, Hochstetter's book could – and perhaps *should* – be regarded as an important example of scientific travel literature, in that it combines a highly readable re-telling of journeys undertaken throughout the country with an informative introduction to all aspects of New Zealand's natural, social and political history. As

such, Hochstetter's *Neu-Seeland* is also, like Dieffenbach's book, one of the most comprehensive and authoritative monographs on nineteenth-century New Zealand ever written.

Perhaps not surprisingly, given his outstanding contribution to early New Zealand geology, Hochstetter's activities as a geologist have generally tended to overshadow his significance as an important first-hand witness and commentator on life in early colonial New Zealand. Hochstetter remains today an important figure and source for New Zealand geologists. His observations of geological features encountered in the course of his travels through New Zealand are frequently cited in the specialist literature by local experts, and among local geologists there is also an ongoing commitment to locating and preserving for posterity as much material on and by Hochstetter as possible.³⁰ A number of biographical sketches of Hochstetter have also been written locally, largely in the latter part of the twentieth century.³¹ With one exception, these articles have been written by geologists,³² and are mostly quite short – none longer than 15 pages. As one would expect, these biographical sketches of Hochstetter by New Zealanders invariably emphasise his activities in this country, but in doing so they do not always give his career before and after the ten months he spent in New Zealand the attention it really deserves. These sketches do provide a valuable foundation for our understanding of Hochstetter and his time in New Zealand, but their brevity still leaves room for much further research to be done. A book-length biography of the man – and in particular one stressing his impressions of contemporary New Zealand – has yet to be written anywhere.

One important aspect of Hochstetter's contribution to New Zealand's science history is his long and fruitful collaboration with another German scientist who was active in this country. Julius Haast (1822-1887), later Sir Julius von Haast, was also a geologist.³³ Arriving in New Zealand a day before Hochstetter did, Haast accompanied the Austrian on his geological exploration of various parts of the two main islands, gaining in the process important knowledge and field experience to supplement the basic training in geology and mineralogy he had supposedly received in his native Bonn.³⁴ After Hochstetter left New Zealand, Haast stayed on and conducted important geological surveys in the provinces of Nelson and Canterbury, later becoming first Director of the Canterbury Museum in Christchurch. In this position, which he held until his death in 1887, Haast became one of this country's most important scientific figures, a kind of focal point, as it were, for both local and – in particular – European scientists, with whom he maintained a truly massive correspondence and also exchanged various items of scientific curiosity, perhaps the most significant of which were the skeletons of New Zealand's extinct giant bird, the moa.³⁵ Quite apart from his good friend Hochstetter, arguably his most important overseas contact, Haast counted scientific luminaries such as Darwin, Hooker, Lyell,

Murchison and Owen among his correspondents, and he also hosted a number of visiting scientists, sometimes for extended periods, in his adopted home town of Christchurch. Among Haast's German-speaking scientific guests were the zoologist Johann Wilhelm Haacke (1855-1912), who worked at the Canterbury Museum under Haast for several months in 1881-1882 before being appointed curator of the South Australian Museum at Adelaide;³⁶ the biologist (and keen alpinist) Robert von Lendenfeld (1858-1913);³⁷ and the noted ornithologist Otto Finsch (1839-1917).³⁸

In considering Haast's contribution to New Zealand science, local scholars might look at the 1142-page biography published more fifty years ago by his son and wonder: what more *can* one write about him? There is, however, still much to be written about Haast and his work, despite his son's massive tome. One aspect of his activities that deserves consideration, for instance, is the sizeable number of articles he wrote for German-language periodicals and newspapers, but which seem to be completely overlooked by New Zealand scholars.³⁹ Do these articles have anything to say about contemporary New Zealand and its natural history that did not appear in Haast's *English*-language publications? In particular, did Haast say things in German that he might have preferred to leave unsaid in publications meant for New Zealand consumption? And then, of course, there is Haast's extensive scientific and personal correspondence with scientists from around the world, which is occasionally consulted, but yet to be edited. (His unpublished English correspondence held at the Alexander Turnbull Library in Wellington fills some 127 folders, his German letters some 75 more). Is there a brave soul somewhere who would be prepared to oversee the editing and annotation of this correspondence, perhaps along the lines of the edition that is currently being undertaken in Australia of the selected letters of Ferdinand von Mueller?⁴⁰

Haast, as our reference to him as *Sir* Julius *von* Haast would suggest, was officially honoured for his services to science. The next important German-speaking naturalist to reside and work in New Zealand, the Austrian Andreas Reischek (1845-1902),⁴¹ is unlikely to ever be regarded as an honourable character; indeed, he remains very much the black sheep in the long line of German-speaking scientists who have visited this country. Reischek arrived in New Zealand in April 1877 and spent two years working as a taxidermist at the Canterbury Museum, having been recommended to Haast by Hochstetter. After completing his official duties, which he executed with great skill, Reischek spent the next ten years exploring remote and inaccessible parts of New Zealand. During this time, he committed two grave sins, for which he is almost universally reviled today. The first of these was in the area of ornithology. Reischek amassed what is probably the most extensive collection ever of New Zealand bird specimens.

Unfortunately, a number of the birds Reischek collected were already rare when he began hunting them for his collection, and thus they were made even rarer still by his attempts to obtain enough suitable specimens.⁴² Reischek's second great sin lay in his activities as a collector of ethnographic material. After befriending and winning the trust of Maori in several places in the North Island, Reischek proceeded to loot both precious artifacts and human remains from sacred Maori sites, and then spirit them away to museums in Austria.⁴³

For obvious reasons, Reischek remains a very controversial character to this day. His activities and publications as an authority on New Zealand's native birds – for which he is given some credit – have been discussed in several publications, for instance by Westerskov and Angehr.⁴⁴ For his ethnographic activities, however, Reischek is given considerably less credit. His only notable recent defender has been the Dunedin anthropologist Erich Kolig, most of whose writing on him has been in German-language publications.⁴⁵ Reischek has been the subject of one book-length biography to date – Michael King's *The Collector*, published in 1981 – but unfortunately this does not make use of Reischek's extensive New Zealand notebooks and other papers which King had erroneously assumed were largely destroyed during World War II.⁴⁶ This unused material would almost certainly throw new light on Reischek the collector and Reischek the man. We might not get to like him, but we might understand him more.

The last scientist we shall consider – to jump forward to the twentieth century – was also Austrian, though he is much more highly regarded than Reischek. The Viennese-born Otto – later *Sir* Otto – Frankel (1900-1998) is best remembered in New Zealand for his work as a wheat breeder.⁴⁷ Between 1929 and 1951, Frankel was plant geneticist and later Chief Executive Officer of the Department of Scientific and Industrial Research's Wheat Research Institute, which bred new varieties of wheat at Lincoln, southwest of Christchurch. Frankel revolutionised wheat-breeding in New Zealand. By the time he left this country in late 1951, new varieties of wheat developed by him and his staff at the Institute had resulted in a twenty percent increase in the average national wheat yield, and were regularly being sown on more than eighty-five per cent of this country's total wheat area. The economic benefits that Frankel's expertise brought this country have yet to be calculated, but they would have been enormous, and it is no exaggeration to say that throughout the middle decades of the twentieth century, there would have been very few New Zealanders indeed whose daily bread had not been made from wheat developed by this man and his staff. After leaving New Zealand, Frankel went on to achieve international fame as a genetic conservationist, and was recognised as an impassioned advocate of the need – indeed the ethical duty – to conserve plant genetic resources, years before the term “biodiversity” was ever coined. Given that Frankel has been dead for not quite four years, it is

perhaps too early for there to have been much written on him; locally there have been just a couple of biographical sketches, as well as Galbreath's useful chapter on wheat breeding in his history of the DSIR.⁴⁸ Other aspects of Frankel's career that deserve future examination are his contribution to modern genetics in New Zealand, and – moving away from purely scientific matters – his work with the philosopher Karl Popper, who was also based in Christchurch (from 1937 to 1945), to help Austrian refugees from Hitler gain entry to New Zealand in the late 1930s.⁴⁹

This brings us back, by way of a conclusion, to something we mentioned towards the outset of this paper, namely, the overlapping of general history and science history that is apparent in the visits to and work of German-speaking scientists in New Zealand. Many of the scientists mentioned in this paper were present at important stages of New Zealand history: the Forsters were present at the European discovery of New Zealand; Dieffenbach was here just as European colonisation was beginning; Hochstetter visited just prior to the outset of interracial conflict, while Reischek visited just after; and Frankel, as an Austrian, was in the interesting position of being present in New Zealand as his adoptive homeland went to war with an enemy that included the country of his birth. Many of these scientists have also left us a valuable written record of their impressions – some in English, some in German, some in both – and the fact that they were not of British stock themselves means that what they saw and thought often came from a somewhat different perspective from the prevailing Anglocentric one. We would therefore do well to consider both their impressions of this country and their work in it, because in considering their contribution to New Zealand's science history, we are also afforded a unique glimpse into New Zealand's *general* history as well.

¹ I would like to thank Garry J. Tee (University of Auckland) for a number of suggestions made in the preparation of this paper.

² For biographical assessments of the Forsters by New Zealand-based authors, see in particular J. C. Beaglehole (ed.), *The Journals of Captain James Cook on his Voyages of Discovery: The Voyage of the Resolution and Discovery 1772-1775* (Cambridge: Cambridge University Press, 1961), pp. xlii-xlix; Michael E. Hoare, *The Tactless Philosopher: Johann Reinhold Forster (1729-98)* (Melbourne: Hawthorn Press, 1975); John A. Asher, "Georg Forster", in: James N. Bade (ed.), *The German Connection: New Zealand and German-Speaking Europe in the Nineteenth Century* (Auckland: Oxford University Press, 1993), pp. 126-133. A useful early Australian perspective on George Forster is Leslie Bodi's "Georg Forster: The 'Pacific Expert' of Eighteenth-Century Germany", *Historical Studies Australia and New Zealand* 8 (1959), pp. 345-363.

³ Johann Reinhold Forster, *Observations Made during a Voyage Round the World*, ed. by Nicholas Thomas, Harriet Guest and Michael Dettelbach, with an appendix by Karl Rensch (Honolulu: University of Hawaii Press, 1996); George Forster, *A Voyage Round the World*, ed. by Nicholas Thomas and Oliver Berghof, with the assistance of Jennifer Newell (Honolulu: University of Hawaii Press, 2000).

⁴ T. F. Cheeseman, *Manual of the New Zealand Flora* (Wellington: Govt. Printer, 1906), pp. xvi-xviii.

⁵ David G. Medway, "Extant Types of New Zealand Birds from Cook's Voyages [pt. 1: Historical, and the Type Paintings]", *Notornis* 23:1 (1976), pp. 44-60; "Extant Types of New Zealand Birds from Cook's Voyages [pt. 2: The Type Specimen]", *Notornis* 23:2 (1976), pp. 120-137; "Type Specimens of Albatrosses collected on Cook's

Second Voyage”, in: Graham Robertson and Rosemary Gales (eds), *Albatross: Biology and Conservation* (Chipping Norton [New South Wales]: Surrey Beatty & Sons, 1998), pp. 3-12.

⁶ F. Bruce Sampson, *Early New Zealand Botanical Art* (Auckland: Reed Methuen, 1985), pp. 33-46.

⁷ J. R. H. Andrews, *The Southern Ark: Zoological Discovery in New Zealand 1769-1900* (Auckland: Century Hutchinson, 1986), esp. pp. 21-33.

⁸ Anne Salmond, *Between Worlds: Early Exchanges between Maori and Europeans 1773-1815* (Auckland: Viking, 1997), *passim*.

⁹ Beaglehole (note 2), pp. xlii, xlvi. To give Beaglehole some credit, it should be noted that he was at least prepared to tone down his opinions of the Forsters somewhat when he came to write his biography of Cook; see J. C. Beaglehole, *The Life of Captain James Cook* (Stanford: Stanford University Press, 1974), pp. 302-3.

¹⁰ A. C. & N. C. Begg, *Dusky Bay* (Christchurch: Whitcombe and Tombs, 1966), esp. pp. 139-147; *James Cook and New Zealand* (Wellington: Govt. Printer, 1969), *passim*.

¹¹ See note 2.

¹² *The Resolution Journal of Johann Reinhold Forster 1772-1775*, ed. by Michael E. Hoare (London: Hakluyt Society, 1982). Hoare’s introduction to this edition (esp. pp. 1-54) contains a further very useful biographical assessment of the elder Forster, which can be regarded as a supplement to that found in Hoare’s biography of him.

¹³ The most important ones are: “The Forsters and Cook’s Second Voyage”, in: Walter Veit (ed.), *Captain James Cook: Image and Impact: South Seas Discoveries and the World of Letters* (Melbourne: Hawthorn Press, 1972), pp. 107-16; *Three Men in a Boat: The Forsters and New Zealand Science* (= First Cook Lecture) (Melbourne: Hawthorn Press, 1975); and *In the Steps of Beaglehole: Cook Researches Past and Prospect* (= Hocken Lecture) (Dunedin: Hocken Library, 1977). An obituary of Hoare – Brad Patterson, “A noisome, vigorous, troublesome wee beastie: Michael Edward Hoare (1941-1996)” – and a bibliography of his publications can be found in *Archifacts* (October, 1996), pp. 1-11 and 235-42.

¹⁴ *Georg Forsters Werke: sämtliche Schriften, Tagebücher, Briefe*, ed. by the Deutsche Akademie der Wissenschaften zu Berlin (Berlin: Akademie-Verlag, 1958-). There are only three copies of this edition in New Zealand libraries: one in the University of Auckland Library, one in the Alexander Turnbull Library, and one in the University of Canterbury Library.

¹⁵ The following sketch of Hügel is indebted to information derived from Michael King, *The Collector: A Biography of Andreas Reischek* (Auckland: Hodder and Stoughton, 1981), p. 24, and the introduction to Baron Charles von Hügel, *New Holland Journal: November 1833 – October 1834*, ed. and trans. by Dymphna Clark (Melbourne: Melbourne University Press, 1994), pp. 1-13.

¹⁶ Dymphna Clark, “Dr John Lhotsky versus Baron von Hügel 1834-1848”, *Journal of the Royal Australian Historical Society* 78 (1992), p. 134.

¹⁷ King (note 15), p. 24.

¹⁸ Indeed, King’s paragraph (and footnote) on von Hügel remains the longest published reference to the Austrian in any New Zealand source. The only other references can be found in William Yate, *An Account of New Zealand and of the Church Missionary Society’s Mission in the Northern Island*, with introduction by Judith Binney (Wellington: A. H. & A. W. Reed, 1970), pp. 228-9 (which mentions simply “a celebrated botanist, Baron Hügel, paid us a visit, and made a large collection of plants. We had a native to tell us their names”), and Gertraut M. Stoffel, “The Austrian Connection with New Zealand in the Nineteenth Century”, in: James N. Bade (ed.), *The German Connection: New Zealand and German-Speaking Europe in the Nineteenth Century* (Auckland: Oxford University Press, 1993), pp. 24-5 (which draws on King).

¹⁹ The microfilm copy of von Hügel’s journal can be found under National Library reference number 73-034. The translation of the journal was undertaken by Reuel Anson Lochore (1903-1991), New Zealand’s first ambassador to the Federal Republic of Germany (1965-1968), and is held among his private papers (National Library reference number 90-389-6/19).

²⁰ The New Zealand section of von Hügel’s “New Holland Journal”, which was left untranslated by Dymphna Clark, is being prepared by Jeremy Spencer (National Museum of Australia, Canberra), assisted by a grant from the Historical Branch of the Department of Internal Affairs (Wellington).

²¹ Ernst Dieffenbach, *Travels in New Zealand, with contributions to the geography, geology, botany, and natural history of that country...* (London: John Murray, 1843, 2 vols; reprint: Christchurch: Capper Press, 1974).

²² Gerda Elizabeth Bell, *Ernst Dieffenbach: Rebel and Humanist* (Palmerston North: The Dunmore Press, 1976).

²³ For a biographical sketch of Bell, see Renate Koch, “Gerda Bell”, in: James N. Bade, ed. with assistance of James Braund, *Out of the Shadow of War: The German Connection with New Zealand in the Twentieth Century* (Melbourne & Auckland: Oxford University Press, 1998), pp. 147-152.

²⁴ See e.g. Bell (note 22) pp. 15, 18. In her last essay on Dieffenbach, Bell wrote that “there are serious lacunae in the description of his life and work”; see Gerda Bell, “Ernst Dieffenbach”, in: James N. Bade (ed.), *The German Connection: New Zealand and German-Speaking Europe in the Nineteenth Century* (Auckland: Oxford University Press, 1993), p. 143, n. 1.

²⁵ Peter Mesenhöller, “Ernst Dieffenbach: Briefe aus dem Straßburger und Zürcher Exil 1833-1836. Eine Flüchtlingskorrespondenz aus dem Umkreis Georg Büchners (Teil 1)”, in: *Georg Büchner Jahrbuch* 8 (1990-1994), pp. 371-443, and “Ernst Dieffenbach: Briefe aus dem Straßburger und Zürcher Exil 1833-1836. Eine Flüchtlingskorrespondenz aus dem Umkreis Georg Büchners (Teil 2)”, in: *Georg Büchner Jahrbuch* 9 (1995-1999), pp. 649-740.

²⁶ At the time of writing (July 2002), the relevant numbers of the *Georg Büchner Jahrbuch* containing Mesenhöller’s edition were not held by any of the university libraries in New Zealand, nor were copies held by the National Library of New Zealand.

²⁷ For biographical information on Hochstetter, one is still largely reliant – even to this day – on the significant number of obituaries, most of them in the German language, that appeared shortly after Hochstetter’s death. The most useful of these is Franz Heger, “Ferdinand von Hochstetter”, *Mitteilungen der Kaiserlich-Königlichen Geographischen Gesellschaft* 27 (1884), pp. 345-392. Perhaps the most significant German-language biographical sketch to have been done in relatively recent years is by Walter Carlé, “Ferdinand Ritter von Hochstetter, berühmter Geologe des letzten Jahrhunderts aus schwäbischem Stamm”, *Jahresheft der Gesellschaft für Naturkunde in Württemberg* 135 (1980), pp. 145-166; English translation (with corrections) by C. A. Fleming, L. O. Kermodé, J. N. Bade and K. B. Spörli, *Carlé’s Biography of Ferdinand von Hochstetter* ([Lower Hutt], Geological Society of New Zealand, 1988).

²⁸ For a full list of Hochstetter’s publications, see Heger (note 27).

²⁹ Ferdinand von Hochstetter, *Neu-Seeland* (Stuttgart: Cotta, 1863); English version (trans. Edward Sauter): *New Zealand: its physical geography, geology and natural history with special reference to the results of government expeditions in the provinces of Auckland and Nelson* (Stuttgart: J.G. Cotta, 1867).

³⁰ Members of the Geological Society of New Zealand’s Historical Studies Group, for instance, have been gathering material relating to Hochstetter for several years.

³¹ The most important ones are: Julius von Haast, “In memoriam: Ferdinand Ritter von Hochstetter”, *New Zealand Journal of Science* 2 (1884), pp. 202-220; C. A. Fleming, “Hochstetter, Christian Gottlieb Ferdinand von”, *Dictionary of New Zealand Biography: Vol. One 1769-1869* (Wellington: Allen & Unwin/Dept. of Internal Affairs, 1990), pp. 199-200; Les Kermodé, “Ferdinand Hochstetter in New Zealand”, *Geological Society of New Zealand Historical Studies Group Newsletter*, no. 5 (September, 1992), pp. 11-26; Les Kermodé, “Ferdinand von Hochstetter”, in: James N. Bade (ed.), *The German Connection: New Zealand and German-Speaking Europe in the Nineteenth Century* (Auckland: Oxford University Press, 1993), pp. 152-161.

³² See John A. Asher, “Hochstetter – Father of New Zealand geology”, in: Ray Knox (ed.), *New Zealand’s Heritage* (Wellington: Hamlyn, 1971), pp. 707-711. Asher was Professor of German at the University of Auckland.

³³ For biographical details, see H. F. von Haast, *The Life and Times of Sir Julius von Haast, Explorer, Geologist, Museum Builder* (Wellington: [privately published], 1948). If there is one criticism that can be made of this tome (apart from its great size), it is the fact that its scope is restricted almost exclusively to the elder Haast’s New Zealand period. More recently, some additional light – though not much – has been cast on the decidedly shadowy early part of Haast’s life by Wolfhart Langer, “Der Bonner Neuseelandforscher Sir Johann Franz Julius von Haast (1822-1887)”, *Bonner Geschichtsblätter* 39 (1989-1992), pp. 273-93, esp. pp. 274-9.

³⁴ According to Langer (note 33, pp. 275-6), Haast was never an enrolled student at the University of Bonn, as has been suggested in his son’s biography; if the elder Haast *did* attend lectures at Bonn, they could only have been public ones.

³⁵ See e.g. H. F. von Haast (note 33), *passim*; for a more recent look at Haast’s involvement in the exchange of moa bones, see Ruth Barton, “Haast and the Moa: Reversing the Tyranny of Distance”, *Pacific Science* 54:3 (2000), pp. 251-263.

³⁶ See Gerhard H. Müller, “Johann Wilhelm Haacke (1855-1912): Biologe, Vererbungsforscher und Kritiker Weismanns”, *Freiburger Universitätsblätter* 87-88 (1985), pp. 167-174.

³⁷ See Robert Hösch, “Lendlmayer von Lendenfeld, Robert”, *Österreichisches Biographisches Lexikon 1815-1850*, ed. Österreichische Akademie der Wissenschaften (Vienna/Cologne/Graz: Hermann Böhlau, 1972), vol. 5, p. 129; H. F. von Haast (note 33), pp. 847-8, 896.

³⁸ See P. G. Sack, “Finsch, Otto (1839-1917)”, *Australian Dictionary of Biography*, ed. Douglas Pike (Melbourne: Melbourne University Press, 1972), vol. 4, pp. 170-1; Herbert Abel, “Finsch, Otto Friedrich Hermann”, *Neue Deutsche Biographie*, ed. Historische Kommission bei der Bayerischen Akademie der Wissenschaften (Berlin: Dunckler & Humblot, 1961), vol. 5, pp. 163-4; H. F. von Haast (note 33), p. 847.

³⁹ The extensive list of Haast’s publications that appears in the biography of him by his son (note 33) mentions a significant number of articles that were published in German or Austrian periodicals (e.g. *Petermanns Geographische Mittheilungen*). The younger Haast also mentions that his father wrote for the *Wiener Zeitung*, using the nom de plume “Julius Hanf” (pp. 6, 12-13).

⁴⁰ Ferdinand von Mueller, *Regards fully yours: selected correspondence of Ferdinand von Mueller*, ed. Rod Home et al. (Bern; New York: Peter Lang, 1998-).

⁴¹ For biographical details, see King (note 15), and Erich Kolig, *Umstrittene Würde: Andreas Reischek, der Neuseeland-Forscher aus dem oberösterreichischen Mühlviertel (1845-1902)* (Vienna: Institut für Völkerkunde der Universität Wien, 1996).

⁴² On Reischek's ornithological activities in New Zealand, see K. E. Westerskov, "The Austrian Andreas Reischek's Ornithological Exploration and Collecting in New Zealand 1877-1889", in: August Obermayer (ed.), *Festschrift for E. W. Herd* (Dunedin: Department of German, University of Otago, 1980), pp. 275-289; King (note 15), esp. chapters 7 & 8.

⁴³ See King (note 15), esp. chapters 3 & 6.

⁴⁴ See Westerskov (note 42), and G. R. Angehr, "A Bird in the Hand: Andreas Reischek and the Stitchbird", *Notornis* 31 (1984), pp. 300-11. Angehr describes Reischek's collection of large numbers Stitchbirds – probably more than 100 specimens – from their last main refuge on Little Barrier Island at a time when the species had disappeared from the New Zealand mainland as "certainly irresponsible" (p. 308).

⁴⁵ See Kolig (note 41), and also his article "Der Österreicher Andreas Reischek in Neuseeland: Ehrenhäuptling oder Erzfeind der Maori?", *Novara: Mitteilungen der Österreichisch-Südpazifischen Gesellschaft* 1 (1998), pp. 41-55.

⁴⁶ Kolig (note 41), pp. 74-75; cf. King (note 15), p. 176.

⁴⁷ The most comprehensive biographical article written on Frankel to date is that by Lloyd Evans, "Otto Herzberg Frankel 1900-1998", *Historical Records of Australian Science*, 12:4 (December, 1999), pp. 495-516; for further biographical material see also the articles by Godley and Braund mentioned below (note 48).

⁴⁸ Eric Godley, "Otto Herzberg Frankel 1900-1998", *Royal Society of New Zealand 1999 Academy Yearbook* (www.rsnz.govt.nz/directory/yearbooks/year99/frankel.php); James Braund, "Otto Frankel – The Austrian who gave New Zealanders their Daily Bread", *New Zealand Science Review* 59:1 (2002), pp. 13-16; and R. A. Galbreath, *DSIR: Making Science Work for New Zealand: Themes from the History of the Department of Scientific and Industrial Research 1926-1992* (Wellington: Victoria University Press, 1998), pp. 34-57.

⁴⁹ The Minutes of the Refugees Emergency Committee, which was formed in 1938 to assist Austrians to flee to New Zealand, and of which both Frankel and Popper were prominent members, are currently held in the Macmillan Brown Library of the University of Canterbury.