On the Armstrong family and herbarium. Part II. The Armstrongs at work

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Where Armstrong, foe to lawless love, with mighty toil and pain
Is always planting trees by scores, and – cuts them down again:

(Anon. 1882)

Introduction

In the 1870s and 1880s, John Armstrong and his son Joseph Armstrong shared a vision to catapult the Christchurch Domain from a civic park to a botanic garden, and the awareness of what was possible and the energy to implement it under trying and straitened circumstances.

Their achievements (for instance, as described by Beaumont 2013, pp 54–68) included the establishment of a large pinetum with sectors devoted to conifers from different continents (Fig. 1, A, p. 74); the New Zealand Arboretum (Fig. 1, B), which was needed because of the speed of destruction of the native forests (Anon. 1874), and which contained 700 or more species that Leonard Cockayne would later call "the very finest collection of New Zealand plants in the world" (Cockayne 1907); a new and extensive nursery (Fig. 1, C), a seed exchange system involving international specialist collectors, growers, and botanic gardens; and a collection of over 180 different economic plants including, with the support of the Pharmaceutical Society, those with medicinal properties. These and other transformational features were arranged with a view to public recreation, education, and benefit within a revamped path network. The collections, especially those of native plants, were used for research, and an area was to be planted to show how botanists classified plants.

In Part I (Clemens and Molloy 2020), we described how the Armstrong family – father and mother, John and Ann, and their two children, Joseph Beattie and Annie – settled in Christchurch following their emigration from Whitehaven, England in 1862. They were joined by other close family members, Ann's twice widowed sister, Isabella Shaw, and her three children Margaret Beattie, John Joseph and Maria; and by the Abbott sisters, one of whom would marry Joseph Armstrong in 1874. They came without wealth or university education and earned their living by working for others.

John Armstrong was a trained plantsman and plantation manager. He and his son Joseph were enthusiastic plant collectors, and helped Julius Haast by collecting plant specimens for the herbarium of the new Canterbury Museum, most of which Haast distributed around the world. The Armstrongs' own herbarium lived a precarious, peripatetic existence until coming into the ownership of Manaaki Whenua – Landcare Research and the care of the Allan Herbarium in 2014.

Since publishing Part I, we have made contact with a granddaughter of John Joseph Shaw, who was Joseph Armstrong's first cousin and his Executor in 1926. Unfortunately, no papers relating to the Armstrongs are known to the Shaw family.

The greatest source of information on the botanical research of the Armstrongs remains the *Transactions and Proceedings of the New Zealand Institute* where their memberships, oral presentations, and main publications of the 1870s and 1880s are recorded. We also have Armstrong publications in other New Zealand and English.journals and newspapers at this time. Running parallel with these sources of information is the correspondence between Joseph Dalton Hooker at the Royal Botanical Gardens, Kew and Julius Haast in Christchurch (Nolden et al. 2013). It refers to John Armstrong's plant collecting on several occasions, and sheds light on the setting in which the Armstrongs worked.

In Part II, we put forward explanations for the fact that the initial successes of the Armstrongs did not develop into sustained professional appreciation, or as Ginn (2009, p. 44) put it "they lacked a commensurate ability to convert this botanical capital into scientific prestige". We examine how this apparent rise and fall in their fortunes might relate to the puzzles posed by the odd pattern of Joseph Armstrong's scientific publishing

referred to by Godley (1999). Joseph's father, John Armstrong, exhibited a similarly abrupt start-stop pattern of publishing 10 years earlier, making this doubly puzzling.

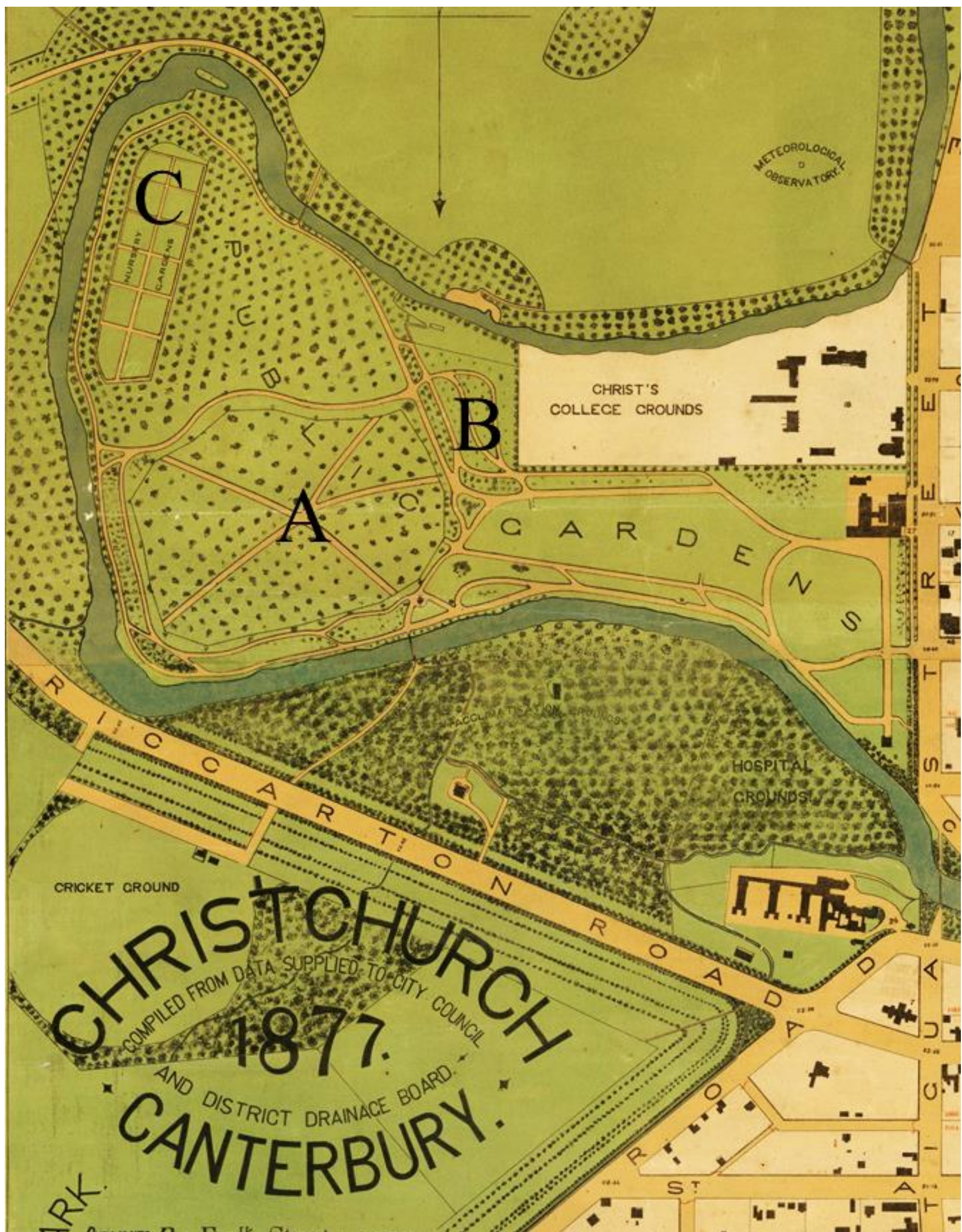


Figure 1. (Annotated part of) Lambert, T.S. (Thomas Stoddart), 1840-1915. Christchurch, Canterbury [1877]. Compiled from data supplied to City Council and District Drainage Board; T.S. Lambert, delt. Ref: 834.4492a 1877. Alexander Turnbull Library, Wellington, New Zealand.

Four of the five men who have been described as "the captains of nineteenth-century New Zealand science" are involved to some extent in this story: Julius (later von) Haast, James Hector, Frederick Hutton, and Thomas Frederick Cheeseman. William Colenso, one of whose specimens is in the Armstrong Herbarium, was the fifth (Braund 2017, p. 69).

The Christchurch Domain refers to the area of land within the loop in the Avon River that today we regard as the Christchurch Botanic Gardens. In the latter 1800s it was variously referred to as the Public Gardens, the Government Gardens, the Government Domain, and the Christchurch Botanic Garden.

John Armstrong enters and leaves the Philosophical Institute of Canterbury

The most prestigious science publication in the Colony from the late 1860s was the *Transactions and Proceedings of the New Zealand Institute* (later, of the *Royal Society of New Zealand*). Original papers would typically be read before members of one of the provincial science Societies affiliated under the New Zealand Institute. One of these was the Philosophical Institute of Canterbury. Hard copies of papers that had been read were then forwarded to James Hector, Director of the Geological Survey and Colonial Museum in Wellington, who managed their combined annual publication.

Membership of the Philosophical Institute of Canterbury was necessary in order to deliver papers at Institute meetings and to be published in the *Transactions and Proceedings*. Presumably supported by Julius Haast, who was President at the time, John Armstrong became a member of the Institute in 1868. He was subsequently honoured by being elected to the Institute's Council for 1871 and 1872.

John Armstrong read three papers before members between December 1868 and October 1871, and contributed to two further reports on indigenous and naturalized grasses in 1871. All five of these contributions were published in the *Transactions and Proceedings* between 1869 and 1871. John's first paper was the one introduced by Haast, who acknowledged the assistance of John and Joseph Armstrong over the previous four or more years (1864-1868) in collecting plant specimens.

And then, as far as we can tell, there was no further engagement between John Armstrong and the Canterbury scientific community. He ceased reading science papers and publishing with the Institute as abruptly as he had started only three years before. He stood down from Council in 1873 and his membership appears to have lapsed immediately. It is possible that the "Armstrong, A. F." or "Armstrong, H. F." in the Lists of Members for 1873-1877 was in fact a typological error of John Armstrong's initials (Armstrong, J. F.). Even so, his participation in the Institute was short-lived.

If we assume John Armstrong could afford the annual subscription of one guinea a year for continuing membership (he was appointed to the position of Head Gardener on an annual salary of £150 in 1867), a hint of what might have otherwise contributed to his withdrawal from the Institute comes from the correspondence between Haast and Hooker. Dates of letters and page numbers below refer to Nolden et al. (2013).

In several letters written during 1866-1871, Haast describes the hardworking John Armstrong assiduously collecting plant specimens, live plants for Wardian cases, and seeds to send to Kew, generally with no prospect of personal remuneration. In 1869, Haast writes that he "has procured for him [Armstrong] leave of absence & a small vote of money, to go to the Alps in the proper season, to collect the live plants" that Hooker wanted (12 Feb 1869, p. 140). This support was obtained from the Domain Board to defray expenses, not as a payment to Armstrong, and was in return for plants and seeds received from Hooker and Haast.

Hooker is occasionally appreciative, one time in 1866 even indicating that Haast should thank, not Armstrong, but George Gould, Armstrong's employer at the time, for allowing Armstrong to make collections (19 Dec 1866, p. 104). However, Hooker is generally dismissive of Armstrong's skills suggesting an education would be wasted on someone with so little aptitude for learning: "want of discrimination that no education ever mends" (31 Oct 1867, p. 121). Haast defends Armstrong when he explains to the novelty-seeking Hooker that:

> "*Concerning the Armstrong collections, I wish to point out that they were all collected near Christchurch within 5 or 6 miles & that thus there is little probability that there are many or any novelties amongst them ... And therefore I was very grateful to you & glad to see that you had named the new* Hymenophyllum *after them* (10 Dec 1867, p. 122).

The correspondents discuss rising social unrest in England and wealthier European countries, Haast observing that the "working classes are now better & I may say imperfectly educated, that they thus become dissatisfied

with their conditions. ...[T]he working man element struggles to the surface" (16 Jul 1868, p. 127). John Armstrong is not specifically pigeonholed as one of the "working classes" yet clearly he has to work for his living and has no formal scientific education or university degree.

Haast, who with Hooker's blessing had been made a Fellow of the Royal Society of London in 1867, seeks to advance the scientific careers and status of a number of his friends through Hooker's good services, e.g. by sending Hooker "the names of two of my friends which I should like to see elected to the Linnean & Geological Society resp. of London; they are both good amateurs & work hard in their leisure time for the advancement of science in New Zealand" (our underlining). One of these was Carl Fischer Esq. MD of Auckland (2 Jan 1867, p. 106).

However, Haast did not, and likely could not, propose to the august Hooker any such recognition for the scientifically unqualified John Armstrong, even though Armstrong had likewise been hardworking, an amateur, and someone who (with his son) has been using his leisure time to advance science in Haast's service for some years. In a letter John Armstrong wrote to TF Cheeseman at the Auckland Museum to request plant specimens in 1871 (transcribed in Godley 1999), he refers to "My friend Dr Haast". Clearly there were limits to the possibilities of friendship in the environment of the time.

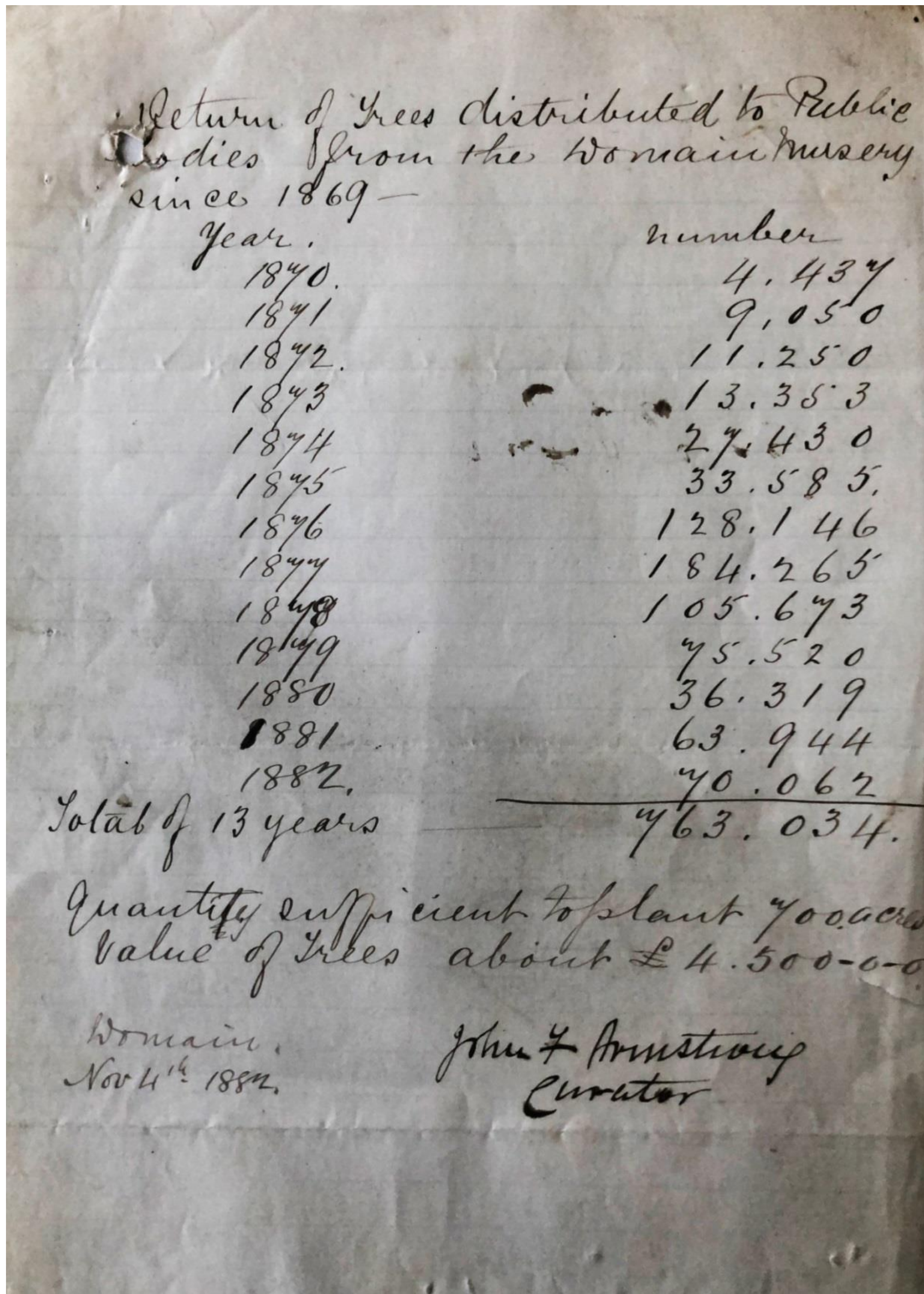
Nonetheless, Haast tried to foster John Armstrong's career as much as he was able locally by supporting his membership of the Philosophical Institute of Canterbury, and his advancement to a position on the Institute's governing body. In 1869 Haast told Hooker that the "Prov[incial] Council consist of 39 members of which about ½ dozen are educated men, who value science, but the rest consist mostly of uneducated or what is worse of so called practical men, who consider scientific men imposters or science a luxury" (9 Jun 1869, p. 142). The energetic efforts of his Armstrong "assistants" must have been not only useful, but refreshing.

The humility with which John Armstrong presented the first of his three papers before the Institute suggests he might well have felt out of place moving in the same circle as the highly educated, influential and relatively wealthy members, many of whom might never have had first-hand experience of the poverty and wretchedness that had led him to leave England. Armstrong had worked for the rich and the noble, not alongside them. His fellows while on the Institute's Council included Presidents Julius Haast and His Honour Mr Justice Gresson, the professional engineer WB Bray, the lawyer RW Fereday, and the Venerable Archdeacon Wilson BA MA.

Of course, Armstrong might have been impervious to these concerns, and relished the chance to be part of the scientific world whether or not his colleagues regarded him as being of the "working classes". He might simply have been content to discontinue his membership of the Institute once he had served his term on its Council, or he might have had other reasons.

What else was happening around this time that might have cut short John Armstrong's participation in the scientific life of the Province? On a personal level, John and Ann Armstrong suffered a terrible blow in March 1872 when their one surviving daughter (Joseph's sister), the 14 year-old Annie Armstrong, died at their home in Springfield Road. Coinciding with this loss, the demands of the Christchurch Domain on John Armstrong's time would have been intense in the 1870s. The new nursery alone was extensive and complex (Anon. 1872). He was also responsible for developing the grounds and maintaining the collections in the Domain, for establishing and eventually thinning the plantations in Hagley Park, often to public disapproval, and for stopping unlawful or lewd behaviour (Anon. 1882). In addition, he was required to grow and distribute many thousands of trees and shrubs to public bodies throughout the Province: 5-15,000 each year during 1870-1873, rising to a peak of over 100,000 each year in 1876-1878 (Fig. 2, p. 77). An estimated million plants went to park, railway, school and church bodies during the 1870s and early 1880s.

Even though he was assisted by his son Joseph from 1873, it is hard to imagine that John Armstrong, would have had enough free time to engage in scientific debate in the 1870s, and even less time to undertake extensive fieldwork and research to support scientific publications. However, both John and Joseph Armstrong made some botanical explorations in the 1870s, including a number to the Mackenzie Country where they could have met their newly arrived relatives (refer Part I). However, to judge by the imperfect measure of the number of dated specimens collected each year in the Armstrong Herbarium, field collecting by both Armstrongs dropped off suddenly after 1872, and had all but stopped after 1877. John and Joseph Armstrong had already collected over 80% of the specimens in their herbarium between 1864 and 1872.



Return of Trees distributed to Public Bodies from the Domain Nursery since 1869 —

Year.	number
1870.	4.437
1871	9,050
1872.	11.250
1873	13.353
1874	27.430
1875	33.585.
1876	128.146
1877	184.265
1878	105.673
1879	75.520
1880	36.319
1881.	63.944
1882.	70.062
Total of 13 years	763.034.

Quantity sufficient to plant 700 acres
Value of Trees about £4.500-0-0

Domain.
Nov 4th 1882.

John F Armstrong
Curator

Figure 2. John Armstrong's signed, handwritten, tally of trees raised and distributed to public bodies 1870-1882. Christchurch Botanic Gardens Library.

There is one other, possibly crucially important, explanation for John Armstrong's withdrawal from further engagement with the Institute. It was so self-evident to the writer of his obituary in 1902 that it required no elaboration for readers of *The Lyttelton Times*:

> "[John Armstrong's] *failing memory prevented him taking the position in the scientific world he might otherwise have done"* (Anon. 1902).

This view seems to have been perpetuated and paraphrased half a century later:

> "*His* [John Armstrong's] *failing memory prevented him from taking a higher place than he did*" (Macdonald ca. 1958).

When John Armstrong's "failing memory" began to affect his work we are not told, except that it had to have been while he was employed as the Curator in the 1880s, if not earlier. Whether "failing memory" was a euphemism for other personal changes tangential to memory loss that hampered John Armstrong's ability to rise to the position that had been expected of him we will probably never know.

Surprisingly, in the early to mid-1880s, after a gap of over 10 years, John Armstrong apparently resumed writing and publishing articles, this time on tree selection, potential new economic crops, veronicas, and frost damage to plants in the Domain; and the journals he appears to have chosen were those favoured at the time by his son (see below). If the otherwise unspecified "failing memory" from which John Armstrong suffered had already become a serious problem, we cannot discount the possibility that Joseph had either helped his father to write and submit these articles for publication, or he had actually written them himself, inserting his father's name as the author. Around the same time, Joseph Armstrong began to publish articles under a pen-name, although in the case of these 1880s articles seemingly authored by John Armstrong, the reason would have been to enhance the standing of the father rather than to conceal the identity of the son.

In 1883, a citizen described Mr Armstrong affectionately as "our old friend" and "the old gentleman" when sympathising with him after thieves and vandals had again damaged the plantings in the Domain (Anon. 1883). A full ten years later, the then former Curator (aged 73) was again being called "our friend old Mr Armstrong" – and we are told he could recall the history of every tree and shrub that had ever been planted in the Domain (Mosley 1893).

Joseph Armstrong starts, and seems to stop, publishing

Attitudes to the working classes expressed by Haast and Hooker – how they were imperfectly educated, how they could not be expected to benefit satisfactorily from education, how gentlemen or professional amateurs who indulge in scientific study at their leisure are more worthy of recognition than working class amateurs – would have continued to pervade scientific circles as Joseph Armstrong made his own sally into the world of the Philosophical Institute of Canterbury.

Ten years after his father had published his first paper, Joseph unleashed a flood of his own. He became a member of the Institute in 1879 and read nine papers before members in the 18 months between October 1879 and March 1881, all of which were subsequently published as seven papers in the *Transactions and Proceedings*.

Not content with that, Joseph also contributed 29 articles to the more horticultural *New Zealand Country Journal* between 1879 and 1881, including the 11-part series "A short History of Grasses", a series called "Garden Notes" that covered not just seasonal issues but also new plants of interest, and papers on the management of plantations and hedges.

This was a phenomenal effort, one might almost say a broadside of almost 40 papers, some of which were extensive, based mainly on his own studies with New Zealand plants in the field and in cultivation, and containing thoughtful and novel discussions.

Having done that, Joseph stopped, and turned his attention elsewhere. Once he had delivered his research papers before the Institute, his membership lapsed after 1882. He also stopped writing for the *New Zealand Country Journal*. Like his father before him, Joseph had published with the Institute for only three years. However, in Joseph's case different reasons can be found for his start-stop participation.

The fact that Joseph had been admitted to membership of the Institute in 1879 shows that the energetic and increasingly experienced 29 year-old had been afforded access to the scientific fold even though he did not have a university education. His preparedness to stand before meetings to deliver so many papers in so short a time speaks of his self-assuredness. He knew the environment in which he would be moving from the experiences of his father, but pressed on regardless. Therefore, his decision to let his membership lapse after only three years might have been influenced mainly by the reception to his science and only secondarily to any personal feelings of being rebuffed by gentleman members.

The first of these possible influences is what Godley (1999) regarded as the puzzling case of the paper entitled "A short sketch of the flora of the Province of Canterbury, with catalogue of species" (Armstrong JB 1879). When he read the paper on 2 October 1879, Joseph described how he divided the Province into four districts, the main features of each district, and the abundance of flowering plant and fern species occurring in each. It

is clear that these groups had received most of his attention; he said he was not going to comment on cryptogams at the time because his work was incomplete and too much still needed to be done in that area. It is a little puzzling, therefore, to find that when the paper appeared in print in Volume 12 of the *Transactions and Proceedings*, it included several pages of moss, liverwort, algal, fungal, and lichen species, the very taxa about which Joseph said his knowledge was incomplete.

Colourful explanations can be proposed for this, such as, someone other than Joseph inserted the offending lists of taxa in his paper without telling him, or Joseph had disagreed with Haast over how his paper should appear in print. In the Preface to his *Geology of the Provinces of Canterbury and Westland, New Zealand* (Haast J von 1879), Haast wrote that he had been unable to include intended chapters on zoological and botanical exploration because there had been insufficient space. Haast might not have wanted Joseph Armstrong to publish his paper at all because he had wanted to publish botanical explorations in Canterbury under his own name.

There might be some truth in this explanation. A few years earlier, Haast had been infuriated by what he saw as the underhand actions of one of his assistants in the acrimonious "Sumner Cave controversy" (Nolden et al. 2013, p. 5). Haast's former employee Alexander McKay had independently presented and published findings he had gathered while working for Haast. In the case of Joseph Armstrong, Haast might have believed that he owned the botanical information collected by his unpaid assistant and resented Joseph presenting his findings as his own.

In turn, Joseph might well have felt hurt by the lack of recognition he was given for botanical exploration in Haast's book, even though a botanical section had not been included. The following supports this suggestion: In August 1886, the year before he died, Haast presented John Armstrong with a copy of his book, *Geology of the Provinces of Canterbury and Westland*, "with the author's best wishes". This copy is held in the Christchurch Botanic Gardens Library. On page 145, Haast begins to describe his exploration of the Waimakariri headwaters, and goes on to state "I ascended the Mount Torlesse and the opposite ranges for detailed geological and botanical explorations". Tellingly, on the same page Joseph Armstrong has handwritten in ink "By Messrs Haast, J.B. Armstrong & Fuller" (the last named being Frederick Richardson Fuller, Haast's taxidermist and key employee).

However, there is a more prosaic and likely solution to this puzzle. The paper was favourably reviewed in the *Gardeners' Chronicle* and in the *New Zealand Country Journal*. In the latter review it is stated that an "incomplete list of mosses, sea-weeds, &c." had been included. This, and the way the various lists have been organised, strongly suggests that Joseph made the ill-advised insertion himself. He would have been disappointed by the fallout. His incomplete lists would be dismissed (e.g. by Laing 1885). He would be viewed as unprofessional for listing taxa about which he was not an acknowledged expert. He was criticised for questionable plant identifications and/or collection locations. It was not the kind of reception anyone would wish for their first independently authored science paper.

A second factor influencing Joseph's decision to let his membership of the Institute lapse might have been that other botanists did not appreciate being lectured on how to study the flora. For example, in his synopsis of *Veronica* (Armstrong JB 1880, p. 345), which Leonard Cockayne later described as a "bold and excellent paper" (Cockayne 1911), Joseph stressed the importance of studying the living plant, wild and cultivated, not just the herbarium specimen, something that he was uniquely able to do using the New Zealand arboretum in the Christchurch Domain. By the early 1880s the Domain was developing into a botanic garden where "common garden" experiments (comparing plants of different provenance cultivated side-by-side) and other research and educational opportunities could be realised.

Lastly, and crucially, it would seem that the members of the Institute simply did not want to hear or read any more of Joseph's research. Joseph delivered what has previously been taken to be his last paper before members of the Institute on 3 March 1881. This subsequently appeared in print as "Description of new plants" in the *Transactions and Proceedings*. In fact, Joseph had read three papers that day: one on a native violet, a second on a new *Asplenium*, and a third on a species of *Asperula*. Their condensation into one printed paper would have been irritating. However, of greater significance is one further, and truly last paper Joseph read before the Institute two years later, which until now has been overlooked.

This final paper was on the fertilization of red clover. Joseph read it before the Institute on 7 June 1883 at a meeting chaired by Professor FW Hutton. However, the paper was never published in the next issue of the *Transactions and Proceedings* presumably because Joseph had allowed his membership to lapse. We do not

know if Joseph let his membership lapse because of the reception to this last paper, or if he had already decided to leave.

Notwithstanding or perhaps because of this, Hutton asked Joseph to prepare a "few notes" on the fertilization of red clover for publication in the *New Zealand Journal of Science*, Hutton's own newly released journal. These "few notes", as Joseph pointedly refers to in his paper (Armstrong JB 1883), were published in Hutton's new journal in 1883, followed the next year by a very short, but incisive, "General note" on a supposed new native plant species, *Acaena huttoni* (Armstrong JB 1884).

While Hutton seems to be trying to help the young botanist publish his work (and in the process getting the copy he needed to fill his new journal), he was perhaps reflecting an opinion of Institute members that Joseph Armstrong (and others like him) should be publishing in the "Notes" section of his new journal and not in the Institute's prestigious *Transactions and Proceedings*. Hutton explains:

> "[T]*here are many persons who devote the few spare hours of a busy life to scientific pursuits, and who in the course of their researches accumulate a considerable amount of valuable information, but they shrink from publishing what they consider their fragmentary knowledge in our recognised channel for scientific work. ... Indeed, it is hoped that such amateur workers – and there is a considerable number of them in the Colony – will freely avail themselves of the facilities now offered to them, and will make the "Notes" of this journal one of its most interesting and valuable features. Our columns will be open to all...*" (Hutton 1882, p. 2).

To turn Hutton's phrase on its head, we can say that on the contrary, Joseph Armstrong was no shrinking violet. He had already dared to publish extensively in the "recognised channel for scientific work", viz. the Institute's *Transactions and Proceedings*. The message that might have been clear to Joseph, whether intended or not, was that his participation in the scientific debate of his betters, no matter how valuable his information, was not wanted.

This period, around 1883-1884, was a turning point for Joseph Armstrong. In light of the explanations canvassed above, it is not at all puzzling that he parted from the Institute. The Institute's members failed to countenance and benefit from Joseph's ideas; and by turning his back on the Canterbury scientific fraternity, Joseph could not publish his findings in the "recognised channel". This explains the puzzle of why Joseph Armstrong wrote "nothing more to speak of" (Godley 1999, p. 5) after 1884. As Eric Godley pointed out, Joseph had no shortage of ideas and projects he was working on at the time, but he had lost both his audience and his publisher. We might also expect that it was from this time forward that the Armstrongs' herbarium, which would later be organised into the Armstrong Herbarium by Arnold Wall (refer Part I), became inaccessible to botanists who continued to benefit from Institute membership.

Conclusion

Looking back at the Armstrongs at work we have tried to explain why they engaged with, and then parted from, the scientific circle of the Philosophical Institute of Canterbury; why the science publications flowed, and then dried up. Some of these explanations can be tested as new documentary evidence comes to light.

In due course, we will test if the Armstrongs' herbarium was locked up in the early 1880s as we suppose; we will track the growing recognition of the existence of a botanic garden in Christchurch leading up to the Armstrongs' stressful departure in 1889; and we will continue to explore Joseph Armstrong's publishing career, often under one or other of his botanical pen-names, after parting with the Institute. We will also provide a full list of John and Joseph Armstrong's papers, magazine articles, and newspaper columns.

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