

**SOME PIONEER WOMEN GRADUATES IN BOTANY FROM CANTERBURY
UNIVERSITY COLLEGE**

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Canterbury has been one of the main centres for botanical science in New Zealand since the time of the very early work of Etienne Raoul at Akaroa (1840s), Julius Haast in the Southern Alps (1860s), and the Armstrongs, father and son (1870s and 80s). Women were not much involved in scientific studies on Canterbury botany until the early 1900s when Leonard Cockayne (1855-1934) was pursuing from Christchurch his research on our indigenous plants. He was eventually to become the foremost botanist and a leader in science in our country (24). The quality and quantity of Cockayne's scientific work, evident in many publications, meant that he had an important influence on established researchers and young beginners in science, including many of the earliest women graduates in botany from Canterbury University College.

Eric Godley in his 1967 survey of a century of botany in Canterbury (8) refers to some of the original women botanists, including **Bella Dytes Macintosh McCallum (née Cross, ?-1927)**. Bella, an early graduate in botany from Canterbury University College, was born in Timaru and educated at Timaru Girls' High School. She graduated B.A. in 1908 and was Senior Scholar in botany, and M.A. in 1909 with First Class Honours in botany. Bella's M.A. thesis was published as a study on life-forms and leaf anatomy of N.Z. halophytes in the neighbourhood of Christchurch and Timaru (5). She represented the University at tennis and was a member of the 1st hockey XI. In addition, she was a member of the Executive of the Students' Association.

In 1915 Bella married Lancelot Shadwell Jennings (1888-1916) who became a Captain in the N.Z. Army and was killed in action in World War I. He was also a graduate in biology from

Canterbury (M.Sc., 1911). He was N.Z. University tennis champion (1908-12) and in 1912 he and his future wife, Bella, won all five tennis championships between them (1). Bella prepared her husband's research notes for posthumous publication (16). In my account of N.Z. women in science (to be published) I have included a special category of husband and wife researchers. The Jennings are among the first in this compilation. In later years Bella married Dr P. McCallum.

Bella graduated D.Sc. in 1917 (though another Canterbury University College record gives 1919). Hers may be the first N.Z. award of its kind to a woman; she was followed by **Kathleen Curtis (Lady Rigg, 1892-1994)** who received her D.Sc. from Imperial College, London in 1919 (25).

Between 1910 and 1911 Bella Cross assembled what was possibly the first extensive review of botanical aspects of N.Z. flax (*Phormium*) and an outline of the investigations was published in *Transactions of the N.Z. Institute* (6). In this paper Bella comments, "The present paper is a brief abstract of a much larger thesis which records the result of my researches in 1910-11. The complete MS has been lodged in the Dominion Museum, Wellington, where it may be consulted by anyone who wishes to carry on further research on *Phormium*". The MS remains in the Library of the Museum of New Zealand Te Papa Tongarewa, Wellington (19) and is a 197pp. typescript with the title *Investigations on Phormium With Regard to the Improvement and its Economic Importance*, by B.D. Cross, M.A.. Bella writes in the Introduction: "It was to the botanical side of the question, therefore, that I limited myself, when I commenced my work on *Phormium* in August 1909 [cf. above]. After reading Dr Cockayne's report and after talking the matter over with Dr Cockayne himself, I decided that my investigations should be along the following lines" which she then outlines. It is likely that this typescript is the thesis submitted by Bella for her D.Sc. degree. Except for the outline paper noted above, no further publications by her on this topic have been seen. Hight and Candy in *A Short History of Canterbury College (University of New Zealand)* (15, p.248) record a further publication by Bella entitled "Some wood-staining fungi (1920)". The location of this publication is unknown to me and no further publications by her have been noted. Hight and Candy (15) record that she travelled to Europe on an Orient Steamship Company's free passage. She took

a short course in bacteriology at Cambridge (1919) and in 1920-21 was an Assistant Lecturer in botany at the University of Edinburgh.

Eric Godley (8) lists three additional women who were early graduates in botany at Canterbury: **Miss A.C.Finlayson**, **Miss E.J. Pegg** and **Miss L.A. Suckling**.

Annie Christina Finlayson was born in Liverpool, England and educated at West Christchurch District High School and Christchurch Girls' High School. She was a Junior University Scholar (1900) and an Exhibitioner in Natural Science (1901). She graduated B.A. in 1902 from Canterbury and M.A. with Second Class Honours in botany in 1902. Later in 1923 she graduated B.Sc. I have little biographical information about Annie though she held various teaching positions, including Wanganui, Waitaki Girls' High School and West Christchurch District High School. The only published work recorded for her is a study of leafless N.Z. plants and their assimilatory tissue (7). This paper in *Transactions of the N.Z. Institute* was communicated by Professor Charles Chilton and was presumably the research for her M.A. degree.

Eliza Julia Rowe (née Pegg) was born in Christchurch and graduated in botany from Canterbury University College with an excellent scholastic record. Eliza was educated at Phillipstown Primary School and East Christchurch District School and Christchurch Girls' High School. She was a Senior National Scholar (1909) and Gammack Scholar and held an Exhibition in botany (1912). She graduated B.A. in 1912 and M.A. in 1913 with First Class Honours in botany. Her M.A. thesis research was on an ecological theme on some N.Z. sand dune plants from New Brighton and was published in the *Transactions* (18). The research was primarily recording the life forms and leaf anatomy of the plants along the lines of some of the studies of Bella McCallum and other early women graduates in botany. This is the only published research recorded for Eliza. From 1914-16 she was an assistant at Otago Girls' High School.

Lydia Annie Hickmott (née Suckling) was born in Christchurch and educated at Richmond Primary School and Christchurch Girls' High School. She was a Senior National and

Gammack Scholar (1907) and graduated B.A. in 1911 and M.A. with Second Class Honours in botany in 1912. Her M.A. thesis was entitled *Plant Ecology of the Forests on the Port Hills*. She was a Student Assistant in biology at Canterbury University College (1910) and taught at Napier Girls' High School (1912-15) and Auckland Girls' Grammar School (1916-17). The only published research I have noted for Lydia is a study of the leaf anatomy of trees and shrubs growing on the Port Hills (21).

Elizabeth Maude Herriott (1882-1936) has the special distinction of being the first woman appointed to the permanent teaching staff at Canterbury University College. She is mentioned in Eric Godley's account (8) and an outline of her life and work was published in the *N.Z. Botanical Society Newsletter* (26).

Born in Canterbury, Elizabeth had a distinguished scholastic career at Christchurch Girls' High School. She graduated M.A. from Canterbury in 1905. Teaching provided an option for many of the early graduates; there were very few opportunities in the early 1900s to continue in research. Elizabeth initially had a teaching career at Rangi Ruru Girls' School and elsewhere but in 1916 was appointed Assistant Lecturer in the Department of Biology at Canterbury University College and was later promoted Lecturer (1928-34) and retired at the age of 52, in 1934.

Elizabeth's period at Canterbury was during the era of Professor Charles Chilton (1860-1929) who held the Chair of Biology (1903-29). My investigations on the history of biology at Canterbury indicate that Chilton was sympathetic to the aspirations of women in science and many of the first women graduates in science were from his Department. On the other hand some other Professors at the time were less than sympathetic (see notes on **Mrs Jean Struthers**). Elizabeth also held the position of clerical Assistant to Chilton when he was Rector of Canterbury University College (1921-27) and was Honorary Librarian to the Philosophical Institute of Canterbury in the 1920s.

Four papers were published in the *Transactions* by Elizabeth, including studies on the leaf anatomy of species from the Subantarctic Islands (10). This was her M.A. thesis research and

she was associated with Leonard Cockayne in this project. The study established her as a pioneer N.Z. plant anatomist. Her versatility as a biologist was indicated by her paper on a fresh water crustacean (11). Her paper on the history of Hagley Park (12) was one of her most significant contributions and she spoke on this topic at the First N.Z. Science Congress in Christchurch in 1919. Her interest in botanical history and biography was also evident from her article on J.F. and J.B. Armstrong (14). Her 1923 paper (13) on the morphology of *Durvillea* was a valuable contribution to knowledge on what was then a little-studied seaweed.

Elizabeth died in Christchurch in 1936 at the age of 54. The only photograph I have seen of her is held in the University of Canterbury's Macmillan Brown Library and shows her at the Cass Field Station wielding a spade, perhaps in the early 1920s.

Avice Hill (née Hamilton, b.1906) was born in Christchurch and attended St Margaret's College. She commenced biological studies at Canterbury University College in 1926, in the days of Professor Chilton and Elizabeth Herriott when there were few women studying science. Avice graduated B.Sc. in 1931, having taken zoology to Stage III, botany to Stage II and physics and chemistry to Stage I. She graduated M.Sc. in 1932 with Second Class Honours in zoology with a thesis entitled *An Account of the Morphology, Life History and Bionomics of Archichauliodes diversus Walker* (9). Avice was one of the earlier women M.Sc. graduates and an early woman appointee to the former DSIR. Initially she was a member of the Entomology Section of the Plant Research Bureau stationed at Palmerston North and worked under entomologist J. Muggeridge (1896-?). She moved with Muggeridge to Nelson in 1937 and was attached to the Cawthron Institute's Department of Entomology. She published 8 research papers in applied entomology.

It was not, however, in the field of entomology that in later years Avice's major activities were directed. Avice's family had lived in the region of Memorial Avenue for 100 years and she inherited the property in the 1950s and with her husband Frank Hill, a master cabinet maker and fine gardener, added trees and shrubs to the property. Avice with the encouragement of Frank (now deceased) became an avid and nationally-known herb grower. Avice's expertise with herbs qualifies her to be included in this survey of Canterbury botanists. Her passion for

herbs really commenced when she and Frank went on a trip to Britain and while there visited the herb garden at Sissinghurst Castle, the home of Lady Nicholson. In 1957 Avice decided to start a Herb Nursery, initially as a hobby, but it turned into a business. She established links with herb growers in England and France and in due course 150 species of herbs and fragrant plants were established in Avice's herb garden and she became the herb authority in Canterbury.

When the time came to sell her valuable property she could not bear to think of a bulldozer tearing down the trees and uprooting her extensive garden. Rather than see it subdivided she gifted her 1.2 ha property to the then Waimairi District Council to run and administer as a craft centre. The Avice Hill Community Reserve and Arts and Crafts Centre was established at 395 Memorial Avenue and the Herb Society maintains a formal herb garden at the Craft Centre.

Avice was closely associated with the establishment of the Canterbury Herb Society; the inaugural meeting was held on 10 June 1968. Over the years Avice has given talks about herbs to many organisations in Christchurch (e.g., 3) and in 1997 she received a Christchurch Civic Award as a leader of the art and craft community in Canterbury.

Flora Buchan Murray was another woman botanist at Canterbury University College during the era of Charles Chilton and Elizabeth Herriott. Unfortunately the information I have relating to her is minimal. After a period at Canterbury she appears to have worked in the U.K. at Sunderland College and the University of Edinburgh (22,23).

Flora was born at Carterton and educated at Christchurch Girls' High School. She graduated B.A. in 1920 from Canterbury University College and M.A. in 1921 with First Class Honours in botany. She was later awarded a doctorate. Its source is unknown to me, but may have been the University of Edinburgh. She was a Research Assistant in forestry at Canterbury just before the original School of Forestry was established in 1924 and, like Elizabeth Herriott, was an early woman appointee to Canterbury University College, as an Assistant Lecturer in the Department of Biology. Clearly in the 1920s the senior staff of the Department, Professor Chilton and Mr Charles Foweraker (1886-1964) were sympathetic to employing women. The

encouragement of women students to participate in field activities in biology at Canterbury prior to 1920 is reflected in an album of photographs of women students participating in field activities at the University's Field Station at Cass that was presented to Leonard Cockayne by Foweraker in 1915. The album is retained in the Cockayne Collection at the Museum of New Zealand Te Papa Tongarewa, Wellington and I retain a copy here at the Centre. Mrs Margaret Jane ("Jean") Foweraker (née Willis, 1893-1989) kindly identified for me the names of the early women biology students in the photographs.

Flora Murray's initial research at Canterbury involved an ecological study of indigenous plants on the south-west side of the Sugarloaf, Port Hills (4). An attempt was made to correlate leaf anatomy with factors in the environment, a theme not unlike the studies of Elizabeth Herriott on plants from the Subantarctic Islands. The only publication I have noted for Flora is a substantial account of the botany of Riccarton Bush in the booklet edited by Chilton (17). This article was reproduced in later booklets about Riccarton Bush. No publications by Flora are recorded in the Author Index 1860-1971 to *Transactions of the N.Z. Institute* (1978).

Mrs Marie Taylor (1930-1999) on a visit to the Royal Botanic Garden, Edinburgh in 1982 was approached by a staff member who had retrieved some archival material relating to Flora that had been stored there (22,23). My attempt to have this archival material returned to N.Z. was unsuccessful.

Jean Boag Struthers (née Cunningham, b.1899) is another early graduate in botany from Canterbury and today has the special honour of being the most senior University graduate from Canterbury, whose life has embraced three centuries. Jean was born at Brookside of farming stock and recalls Clydesdale horses, shingle roads, gorse fences and horse-drawn traps. In those days Brookside had a post office with a special counter for sweets, a blacksmith, a Primary School which she attended, a flour mill complete with water wheel and mill pond, and three churches. Today nothing remains but the Anglican Church. Jean attended Christchurch Girls' High School (1913-17) where there was little science teaching except for some in the home science course which according to Jean was a "hotch potch" (20).

In 1918 Jean entered Canterbury University College which had a roll of 406 at this time. She graduated B.A. in 1921 but her “heart was in science” (20). She studied chemistry for two years and won prizes for chemistry and botany. She was declined entry into advanced chemistry because Professor W.P. Evans (1864-1959) did not consider it a suitable subject for girls: there was too much standing, it was too strenuous, and Jean would have been the only girl. In addition, there was only one toilet in the Department. The decision to bar Jean from advancing chemistry still rankles with her even after all these years.

Jean, however, found Professor Chilton’s Department of Biology more welcoming and she completed an M.A. with First Class Honours in botany in 1922 with a thesis entitled *A Critical Study of the New Zealand Species of the Genus Cordyline and Anatomical and Ecological Notes on Cordyline australis*. Jean taught for a period in N.Z. and in 1931 she travelled to England. She lived in and about London for the next 33 years surviving the London Blitz. Her working life in England allowed her to realize her dream of pursuing chemistry and she became Head of the Department for Chemistry at Twickenham Girls’ Grammar School. Jean and her husband retired to N.Z. in 1963 where Jean taught chemistry at the Correspondence School, retiring at 73. As far as I know she did not publish in botany though her masterate in botany did provide her with the opportunity to establish a career in teaching.

It is likely that this brief survey has omitted a few notable early graduates in botany and the writer would appreciate any suggested additions or corrections. Perhaps there will be an opportunity later to record any important omissions.

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