

Fannie Eleanor Williams: Bacteriologist and Serologist

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Abstract: This chapter reveals the vital role of Fannie Eleanor Williams in the field of medical science in Australia. It argues that Williams, as a bacteriologist and serologist from the early days in Adelaide to her long career at the Walter and Eliza Hall Institute, Melbourne, should be more highly recognised as a leader in her research, laboratory management and mentoring. Although her contribution to medical science has been undervalued, she was the first female to undertake some of her activities and in doing so led the way for other women. This leadership role has been made invisible as a result of historians' patriarchal presumptions about women's roles and work. The chapter rectifies some of the misconceptions within the historiography of Australian science that have obscured Williams' leadership.

Keywords: Walter and Eliza Hall Institute, bacteriology, blood transfusion service, serology, women in science, medical research

In 2011, the newly appointed CEO of the Walter and Eliza Hall Institute of Medical Research (WEHI) in Melbourne made a public call for more women to become leaders in medical science. Yet there was no reference to the institute's very own first female medical scientist, Fannie Eleanor Williams. Over the past half century, the profile and contribution of Williams has suffered under the hands of institute men, academics and historians – being labelled as just a nurse, technician and even housekeeper rather than the professional bacteriologist, serologist and leader that she was. This chapter therefore seeks to reveal Williams' life and work without the prejudices of the past and the gendered view of male doctors who have generally authored medical science histories in Australia. It begins to reposition her life and work into its proper context, drawing on primary sources from both Australia and the United Kingdom. It identifies the leadership style she adopted and the impact of her leading the way as a woman of science.

Early career

Fannie Eleanor Williams was born on 4 July 1884 in Adelaide, South Australia, the daughter of James W. and Helen DuBois. James was a farmer at Reedbeds, in the Henley Beach area. She was the second child of four with an

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older and younger brother and a younger sister. Little is known of her early years. For fifty years her first name was generally spelt incorrectly in secondary texts, and a researcher has located her birth certificate only recently. It is unclear whether Eleanor attended school or was home schooled as there are no extant records to provide this information. However, Williams, known in professional circles as Eleanor, trained as a nurse at the Adelaide Children's Hospital from 1904, graduating in 1907.¹ Later that year she was appointed sister in charge of the Children's Hospital's Thomas Elder Laboratory, where she remained for two years working alongside pathologist Dr Thomas Borthwick.² Here she did no nursing but worked as an assistant to the pathologist. The scope of her duties included charting experiment results, preparing test tubes for cultures and animal management.³ From December 1909 Williams spent a little over a year as a nurse inspector with the Unley Local Board of Health, notifying the council of infectious diseases such as diphtheria and measles through visiting homes and taking swabs.⁴

In 1911, Dr Borthwick accepted the position of honorary bacteriologist at the research laboratory in pathology at the Adelaide Hospital.⁵ This was quite a new facility, started in 1908 by the senior medical officer Dr Trent Champion de Crespigny in a tin shed at the back of the hospital.⁶ In January 1911 Eleanor began working in the same laboratory, appointed as an 'attendant' at a salary of £90 per annum, and was recorded as being the first woman to be so appointed in South Australia.⁷ She remained there until late 1914, when de Crespigny, now the ex-director of the laboratory, invited Eleanor to join him on active service with the Australian Imperial Force (AIF). The only opportunity for a female to serve overseas with the AIF was with the Australian Army Nursing Service and, as her training qualified her for a position, Williams enlisted in 1915 and went to Egypt on 6 August.⁸ It appears that de Crespigny was confident of being able to employ her as a bacteriologist as, unlike other nurses, she enlisted directly into the 3rd Australian General Hospital (3GH) where de Crespigny was commanding officer. So by 1915 Eleanor already had chalked up a number of instances where she had led the way.

Williams arrived in Egypt in September 1915 and immediately joined her unit on Lemnos island in Greece.⁹ This unit received casualties directly from Gallipoli and was the only Australian hospital among several located on Lemnos that had a well-equipped laboratory. After four strenuous months working with Dr (later Sir) Charles Martin, director of the Lister Institute, London, and an eminent British scientist, Eleanor was adjudged a highly effective bacteriologist and, in particular, was seen as an expert in serological investigations of dysentery.¹⁰ This disease had caused great manpower wastage during the latter half of the Gallipoli campaign.

With Martin, Williams co-authored several papers on dysentery that were published in the high profile *British Medical Journal*. An immediate result of this work done at 3AGH was a greatly increased demand for specific diagnostic and curative sera.¹¹ For her contributions in this field, Sister Williams (as she was then known) was mentioned in despatches and awarded the Associate Royal Red Cross, a high honour only bestowed upon military nurses.¹² She was the first (and only) female bacteriologist to serve in the AIF, although official military histories and nursing histories do not note her unique employment situation. Martin appears to have ‘adopted’ Eleanor as a highly competent co-worker, as from their time on Lemnos to the end of the war, they were co-posted; it is evident that Martin mentored Williams for many years.¹³ Elaine Marjory Little described their relationship as ‘the perfect laboratory association’.¹⁴

In January 1916, 3AGH returned to Egypt from Lemnos and after some leave Eleanor was posted to the Choubra Infectious Diseases Hospital just outside Cairo. There are no details available in her army personnel file of what work she did here but presumably it was in a laboratory, culturing the many swabs of diseases from the patients. Eleanor transferred to England in 1917, where she worked on the study of meningitis carriers among the staff at AIF Headquarters at the Lister Institute of Preventative Medicine, then known under its wartime guise of the Central Laboratory. She later worked at the 25th British Stationary Hospital in Rouen, France. At this hospital, her laboratory colleague and fellow Australian Dr Elaine Marjory Little was impressed by her standards of perfection and her first-class laboratory technique as they studied infection problems such as *streptococci*, *staphylococci* and gas gangrene.¹⁵ The hospital took in all types of infectious cases except venereal diseases, so the routine laboratory work was noted as varied and interesting. Careful records were kept of all examinations made and valuable data was collected for postwar investigation.¹⁶ Marjory Little later recalled Eleanor’s ability to create a congenial environment most fondly:

Our Sister, in addition to being a most highly trained bacteriologist, had many and varied accomplishments. Surely nobody could know better than she how to care for guinea-pigs and rabbits, both in sickness and in health, and who of those fortunate enough to have spent a Christmas at the hospital will forget the cakes she made with the sugar and fruit sent from Australia, and the baking done in the hot-air oven? Or the dresses she designed and made for the ballet at the Christmas pantomime, or her own wonderful costume at the fancy dress dinner?¹⁷

In the latter part of the war with the outbreaks of Spanish influenza Williams made another impression on the medical community with pathology work on epidemic influenza with army colleagues, including Dr Sydney Patterson and Dr Charles Kellaway with whom she was to later work.¹⁸

Walter and Eliza Hall Institute

Following her repatriation in 1919, Williams moved to Melbourne to join her family who had relocated during the war.¹⁹ On the recommendation of Charles Martin, who remained her mentor for the rest of his life, the director, Dr Sydney Patterson, appointed her second assistant of the Walter and Eliza Hall Institute of Research in Pathology and Medicine (as it was then called) in April 1920.²⁰ As the first bacteriologist and serologist at the institute, Williams played a most important role as a researcher and assistant.²¹ During the early years of the institute's activity, she carried out bacteriological and serological work in her own laboratory in collaboration with Patterson and Dr Neil Hamilton Fairley who was first assistant, and later Dr Harold Dew and Dr Charles Kellaway.²² She managed her own laboratory, located on the top floor, later referred to by Professor Frank Fenner as the institute's diagnostic microbiology laboratory.²³ Patterson's initial choice of topics for research included the bacteriology of respiratory and intestinal infections, and he and Williams presented a paper on pneumonia at the Australasian Medical Congress in Brisbane in 1920.²⁴ Medical areas of interest for Williams included syphilis and dysentery, areas she had studied during the war and for which she was a known expert.

Her very presence and experience in the early days of the institute no doubt set an example and attracted women to come and work in medical science; it is a prime reason why Williams should be seen as a leader in medical science. It is difficult to determine whether her work could or should be labelled as a woman's role given the unique position she occupied at WEHI. While many of the technicians were female and most of the doctors were male, over the years there were many female scientific scholars at the institute. She developed a female social support group with these scholars in 1923 when she became a member of the Lyceum Club, having been proposed and seconded by two female doctors at WEHI, Beatrice Warner and Marion Wanliss.²⁵ Both had studied at the University of Melbourne and were linked to Trinity College, as had been Dr de Crespigny, her mentor from Adelaide Hospital. Dr Lucy Bryce, who later was to work closely with Williams at WEHI on the Blood Transfusion Service, shared the same link.

In 1923, Dr Charles Kellaway replaced Patterson as director of WEHI.²⁶ Kellaway brought Williams in on his snake venom research associated with bacteria. As well as continuing her lab work on serological diagnosis of hydatid disease and syphilis, the institute's annual reports record that Williams continued to research and co-author papers and even travelled to New Zealand in 1927 as a speaker at the Australasian Medical Congress.²⁷ This is further evidence of her leadership in medical science.

In the late 1930s, as the institute grew, Williams also became responsible for the training and control of technicians and general management of the

organisation.²⁸ She trained technicians in tasks such as making media, mixtures and broths, using a 'recipe book' she devised.²⁹ A tall, sometimes imposing woman, Williams had a soft gentle voice and was greatly respected by junior staff as a very good teacher and mentor who expected high standards.³⁰ One of her students, Clive Scaife, recalled that he learnt to do technical work thoroughly as a consequence of her direction and standards.³¹ She was regarded as very pleasant to work with and extremely competent, doing much for the general welfare and organisation of the institute. Having been mentored herself by Martin and de Crespigny, it appears that she was 'paying forward' the experience.³² She even provided initial training to Dr Frank Macfarlane Burnet who came into the institute as acting pathological registrar in March 1923.³³ He recalled that Williams was involved with his early training in the standard techniques in practical bacteriology which consisted of TAB agglutinations and the preparation of plates for typhoid, sputum for tuberculosis, and various other sputum and urine cultures.³⁴

As was the usual procedure then, I was expected to start work on 'clinical pathology' which meant mostly 'culture and smear' from infected material and haematology, without any special training. The director and Miss Williams introduced me to the use of blood agar plates, showed me how to handle capillary pipettes and left me to my own resources. There are many worse ways of teaching than that.³⁵

The technique of blood transfusion presented a problem in private medical practice at this time, as there was no stored blood or serum.³⁶ Consequently, the next advance in transfusion work was the introduction of a 'blood bank' to make liberal supplies of blood far more readily available.³⁷ In 1938 and 1939, Williams and Dr Ian Wood developed the necessary techniques to allow them to store blood and establish a blood bank in WEHI, the first in Australia. This included the important technical problems of obtaining, storing and administering the blood, which was at this stage being more and more widely used in transfusions. It had immediate usefulness in dealing with hospital emergencies. For the first three years of World War II, the institute was the centre of the Red Cross Blood Transfusion Service and Williams became known as 'the channel through which serological techniques developed in Melbourne'.³⁸

Dr Wood and Dr Colin Ross from the institute, now both in the army, worked on the means for the supply of blood and serum in the field, with Williams seeing that, for anything proposed, the practical minutiae of cleaning and so forth were considered. It is unlikely that someone without military laboratory experience in World War I would have been able to serve WEHI so well in this regard. The work went well, although according to Vivianne de Vahl Davis Eleanor's ability to cope with emergencies was often needed. She proved herself capable of improvising when the special equipment made for

Wood's blood transfusion technique was found to be made for left-handed operation: the officer in charge of the manufacture of the equipment was himself left-handed. While other members of the unit were becoming flustered, Williams rang the army and firmly requested ten left-handed sergeants to administer the transfusions.³⁹ In this regard, Eleanor Williams was noted by Dr Margaret Holmes as an 'eminence grise' for the army, organising blood groupings and providing them with test tubes and citrate solutions.⁴⁰

As the direction of WEHI evolved, and Burnet's work on virology took precedence, Eleanor's work at the institute extended in other directions. She became an expert in hydatid complement fixation tests at a time when hydatids was a serious problem in both animal husbandry and public health, and was the leading authority on Wassermann tests used in the detection of sexual diseases in Melbourne for many years.⁴¹

Leadership

Eleanor Williams was a leader in a variety of ways throughout her life. In the sense of 'taking charge', she filled roles as a manager, a person in charge and organiser – all terms associated with leadership. She also led the way for others. She was the first female employed at WEHI although this is not acknowledged by the institute in their historical documents or on their current website.⁴² At least Dr, later Professor, Frank Macfarlane Burnet recognised her 'unique position'.⁴³ She also led the way through publishing papers – she appears to be one of the first Australian women and possibly the first non-doctor to publish a research paper in a medical journal, although her publication record is sometimes veiled by the use of just her initials as author name, particularly in the early days of WEHI.⁴⁴ Her manner was that not of a competitor but collaborative in nature; most of her published papers are co-authored.

Eleanor saw herself as a professional woman and she was paid as a professional. She earned £450 in annual salary in 1925–26. To compare this salary, the most prominent matron in Victoria at the time was the matron of the Melbourne Hospital and it was not until 1927 that the hospital's committee of management agreed to increase her salary to an amount greater than Williams was receiving.⁴⁵

Williams' approach to, and her philosophy of, leadership rotated around her practical nature and scientific authority; she put herself central to the organisation and its people and she mentored, trained and inspired others, showing that she cared. She particularly offered this support to the female technicians at WEHI. Dr Lucy Bryce, the honorary director of the Blood Transfusion Service, recorded Williams' teaching and work at the institute as

‘so inspiring’.⁴⁶ Macfarlane Burnet also noted her as ‘the centre of commonsense and helpfulness around which all the activities of the Institute rotated’ thus putting her in a central leadership position.⁴⁷ She became the institute’s general manager in every sense except the title; an appropriate analogy would be a university academic head of department, who is both a researcher and manager. Her replacement was titled general manager.

There appears to be a number of areas of systemic discrimination against crediting Williams with the status of a medical scientist. During her time at WEHI, there was prejudice because she was neither a university graduate nor a qualified doctor like the other non-technical staff working there. The medical science fraternity did not know how to respond to someone who could not and did not seek the accolades available to graduates. The usual avenues of publication and promotion did not come openly to her. If not for the mentors that she had during her life, highly influential men such as Sir Charles Martin and Sir Constantine Trent Champion de Crespigny, she may not have been employed at WEHI or her tenure might have been greatly shortened with the arrival of Burnet who replaced her in the hierarchy as the senior bacteriologist. Also, while other institute staff lectured at the University of Melbourne, it was deemed inappropriate for her to do so – although she was permitted to give practical lectures to students on occasion. Williams also occupied an unusual position at the WEHI in a social sense; she ate in the scientists’ tearoom instead of the technicians’ room but she was not a doctor. Although she may have been influential in securing good female candidates for technical positions, she was unlikely to be considered a suitable role model for future medical scientists at the institute.

Fannie Eleanor Williams retired from the WEHI staff in 1957 and in that year received an MBE (Civil) for her work.⁴⁸ She is still the longest continuous serving employee of the institute although this accolade is often given to Burnet. Between 1917 and 1947, Williams co-authored or authored fifty-five publications with snake venom, hydatids and dysentery being the main topics.⁴⁹ However, because Williams was not a doctor, typically her name was recorded last in any list of authors even if the research had been carried out in her laboratory.

In a historical sense, it is after her time at WEHI where most damage has been done to Williams’ scientific reputation. Prominence in Australian 1950s medical science historiography has been given by men to men, and Eleanor’s work did not seem to count for much. The first WEHI history was not written until after Williams had left the institute and by authors who had only known her in the latter stages of her career where the bacteriological work she was renowned for had disappeared from the institute’s research agenda. Her mentors had largely predeceased her, meaning that there were few with the knowledge of her significant career achievements.⁵⁰ As a consequence, the

word ‘leader’ was not used to describe Williams by any of the men who wrote about WEHI and its work – but one could posit that this was not unexpected given general expectations of women as homemakers and followers at the time. Even in the WEHI archives it is difficult to find any remaining evidence of such a long and distinguished career; for example, the citation for her MBE, written at the institute, no longer exists. There is no doubt that the work of Williams has been overshadowed by Macfarlane Burnet’s and later Sir Gus Nossal’s giant reputations and connections with WEHI, and the idolatry of these men.

Eleanor did attract an entry in H.J. Gibbney and Ann G. Smith’s *A Biographical Register* but it is full of inaccuracies.⁵¹ As a consequence of this entry, similar mentions were included in the online *Australian Women’s Archives Project* and *Encyclopedia of Australian Science*, again containing incorrect information until amended by this author. Even a female medical and health historian, Claire Hooker, perhaps inadvertently, maligns Williams by writing that Dr Lucy Bryce was the first woman to hold a research position at WEHI.⁵² Although the two people still alive who worked with Williams that I was able to interview had no idea she had trained as a nurse, historically this has been placed to the forefront in several references (Claire Hooker, Matthew Klugman) and her obituary, written by Burnet and Ian Woods, referred to this qualification. In fact, after her nurse training it seems that Williams spent only a little over a year as a district nurse and nurse inspector before beginning her medical science career.

In the absence of a biographical article such as this one, misunderstandings in the historical scholarship have also contributed to concealing Williams’ career. Vivianne de Vahl Davis in her dissertation on WEHI recorded her as being ‘an invaluable assistant to Kellaway and Burnet’, confusing the scientific position of ‘Assistant’ with a lower status position, a distinction she does not make for the First Assistant, a male doctor.⁵³ When Burnet wrote in her obituary that Williams was in charge of the technicians and ‘housekeeping’ for the institute, he did not mean that she worked as a cleaner. Unfortunately, one secondary source did not realise the significance of the quote marks around the word ‘housekeeping’ and omitted them, thus completely reducing Eleanor’s position to that of a domestic helper. Other researchers such as Paul Masci and Philip Kendall recorded Eleanor in their 1995 book on taipan snakes as ‘Dr Williams’ although there is no evidence in any primary sources to suggest this.⁵⁴

Well known in the research laboratory field and looked up to wherever she went, Eleanor Williams died in 1963 having made significant contributions to the science of medicine in Australia. The Australian Red Cross Society honoured her blood bank work in 1964 by naming a research unit after her.⁵⁵ Members of the Walter and Eliza Hall Institute felt her thirty-

seven years of distinguished service made her an institute ‘legend’.⁵⁶ Her obituary in the *Medical Journal of Australia*, written by Burnet and Woods, included the words: ‘Miss Williams possessed a remarkable knowledge, a keen sence [*sic*] of humour and tenacity of purpose. Her loyalty and kindness to both young and old will always be remembered’.⁵⁷

In the field of medical science in Australia, the work, leadership and contribution of Fannie Eleanor Williams stands as a model of leadership in an era where women scientists were few. Her research work, her publications and her leadership of people at the Walter and Eliza Hall Institute mark her as a candidate worthy of greater recognition in Australia.

¹ Information kindly provided by Dr Joan Durdin, consulting South Australian nursing sources. I am also grateful to Williams’ niece, Mrs A. Hawkins, for providing background information on the family, and to Jo Marshall, head of the Library and Information Service at WEHI and Peter Hobbins, PhD candidate, University of Sydney, for sharing primary source material.

² ‘On Active Service’, *Advertiser*, 3 March 1917, 10; The South Australian Trained Nurses’ Centenary Committee, *Nursing in South Australia: First Hundred Years 1837–1937* (Adelaide: The South Australian Trained Nurses’ Centenary Committee, 1938), 109.

³ The South Australian Trained Nurses’ Centenary Committee, 76.

⁴ ‘Unley City Council’, *Advertiser*, 11 January 1910, 7; ‘The Outbreak of Diphtheria’, *Advertiser*, 5 April 1910, 12; ‘Infectious Disease’, *Register*, 9 August 1910, 9.

⁵ Neville Hicks and Elisabeth Leopold, ‘Borthwick, Thomas (1860–1924)’, *Australian Dictionary of Biography*, vol. 7 (Melbourne: Melbourne University Press, 1979), 350–1.

⁶ Earle Hackett, ‘de Crespigny, Sir Constantine Trent Champion (1882–1952)’, *Australian Dictionary of Biography* online, <http://adb.anu.edu.au/biography/de-crespigny-sir-constantine-trent-champion-5550/text9461> (accessed 12 March 2012).

⁷ ‘Work Rewarded by Queen’, *Age*, 19 June 1957, 8.

⁸ Frank Fenner (ed.), *History of Microbiology in Australia* (Canberra: Australian Society for Microbiology, 1990), 562.

⁹ Attestation Paper of Persons enlisted for Service Abroad, in Fannie Eleanor Williams, B2455, personnel file, National Archives of Australia (NAA).

¹⁰ ‘Notes from South Australia’, *The Australasian Nurses’ Journal* vol. 14, no. 3 (March 1916): 109; Frank Macfarlane Burnet, *Walter and Eliza Hall Institute 1915–1965* (Melbourne: Melbourne University Press, 1971), 170; Fenner, 562; H.J. Gibbney and Ann G. Smith (eds.), *A Biographical Register 1788–1939: Notes from the Name Index of the Australian Dictionary of Biography* (Canberra: Australian Dictionary of Biography, 1987), 2, 345.

¹¹ Fenner, 561.

¹² *Commonwealth of Australia Gazette* 62 (19 April 1917). The Australian War Memorial (AWM) Honours and Awards website, spells Williams’ name as Fanny

Elenor Williams, http://www.awm.gov.au/research/people/honours_and_awards (accessed 1 May 2012). The ARRC is also called Royal Red Cross (2nd class).

¹³ Vivianne de Vahl Davis, 'A History of the Walter and Eliza Hall Institute of Medical Research 1915–1978' (PhD thesis, University of New South Wales, 1979), 1, 29.

¹⁴ Elaine Marjory Little, 'Obituary: Fanny [*sic*] Eleanor Williams', *Medical Journal of Australia* (hereafter *MJA*), 9 November 1963, 811–12.

¹⁵ Fenner, 563.

¹⁶ Elaine Marjory Little, 'Life in a Lab in France', *Sydney University Medical Journal* (1923): 18.

¹⁷ Little, 'Life in a Lab in France', 20.

¹⁸ A.G. Butler, *Official History of the Australian Army Medical Services 1914/1918*, vol. 3 (Canberra: Australian War Memorial, 1943), 206n.

¹⁹ She lived with her sister Kathleen in South Yarra and did not marry.

²⁰ Macfarlane Burnet and Ian Woods, obituary of Fannie Eleanor Williams, *MJA*, 19 October 1963, 680; Macfarlane Burnet, 14.

²¹ Department of Pathology, University of Melbourne, *The Melbourne School of Pathology: Phases and Contrasts* (Melbourne: Department of Pathology, University of Melbourne, 1962), 58.

²² Burnet and Woods, 680; Fenner, 154.

²³ Macfarlane Burnet, 32; Fenner, 154.

²⁴ Macfarlane Burnet, 17.

²⁵ 'The Walter and Eliza Hall Institute of Research in Pathology and Medicine, Report of the Acting Director to the Board for the Year Ended 18th July, 1923', in Melbourne Hospital report, 57, held WEHI Archives. Entry for F. Eleanor Williams, in Lyceum Club Membership Register, kindly provided by Mr Peter Stratton, general manager, 2010.

²⁶ Fenner, 81.

²⁷ *Supplement to MJA*, 17 December 1927.

²⁸ Fenner, 562; Macfarlane Burnet, 32.

²⁹ Clyde Scaife, past employee at WEHI, phone interview with author, 27 November 2008.

³⁰ Interview in 2005 with Dr Margaret Holmes who worked with Williams at WEHI from 1938.

³¹ Clyde Scaife, phone interview with author, 27 November 2008.

³² Williams' niece, Mrs A. Hawkins, recalls that Williams also mentored young people who visited her home.

³³ Fenner, 81.

³⁴ Christopher Sexton, *Burnet: A Life* (Melbourne: Oxford University Press, 1999), 43.

³⁵ Macfarlane Burnet, 18.

³⁶ Macfarlane Burnet, 50.

³⁷ Ian J. Wood, *Discovery and Healing in Peace and War: An Autobiography* (Melbourne, publisher unknown, 1984), 29.

- ³⁸ Macfarlane Burnet, 50; 'Williams, Fanny [*sic*] Eleanor (1890? – 1963)', *Australian Women's Register*, <http://www.womenaustralia.info/biogs/IMP0117b.htm> (accessed 1 May 2012).
- ³⁹ de Vahl Davis, 70, citing interview with Dr Nagler, 1978.
- ⁴⁰ Interview in 2005 with Dr Margaret Holmes.
- ⁴¹ Fenner, 154; Macfarlane Burnet, 19.
- ⁴² http://www.wehi.edu.au/about_us/gender_equity/;
http://www.wehi.edu.au/about_us/history/ (accessed 11 March 2012).
- ⁴³ Macfarlane Burnet, 170.
- ⁴⁴ The first Australian-qualified female doctor to publish in Australia appears to be Dr Grace Boelcke (nee Robinson) in the *Australasian Medical Gazette* in 1908 ('The Sydney Norland Institute', *AMG*, 20 August 1908, 426–47). This is not a research paper. A male researcher called Williams with the initials F.E. also published at the same time as Eleanor Williams.
- ⁴⁵ 'Committee of Management minutes, 1 March 1927', offering an increase of salary to £475 per annum. Figure kindly provided by Gabriele Haveaux, archivist, Royal Melbourne Hospital, 19 November 2010.
- ⁴⁶ Lucy M. Bryce, *An Abiding Gladness* (Melbourne: Georgian House Pty Ltd, 1965), 270.
- ⁴⁷ Macfarlane Burnet, 32.
- ⁴⁸ Fenner, 562; 'Williams, Fanny [*sic*] Eleanor (1890?–1963)', *Australian Women's Register*, <http://www.womenaustralia.info/biogs/IMP0117b.htm> (accessed 1 May 2012).
- ⁴⁹ This is the total of papers discovered to date by this author; there may be more.
- ⁵⁰ Sir Charles Martin died in 1956 in England; C.T.C. de Crespigny died in 1952 in Adelaide.
- ⁵¹ Gibbney and Smith, 345.
- ⁵² Claire Hooker, *Irresistible Forces: Women of Science in Australia* (Melbourne: Melbourne University Press, 2005), 120. Bryce was the first researcher with external funding.
- ⁵³ de Vahl Davis, 33.
- ⁵⁴ Paul Masci and Philip Kendall, *The Taipan: The World's Most Dangerous Snake* (Sydney: Kangaroo Press, 1995), 8.
- ⁵⁵ Bryce, 270.
- ⁵⁶ 'Staff and Visiting Workers (1923–1965)', 72, WEHI Archives.
- ⁵⁷ Burnet and Woods, 680.