

Part I. The Life of Frank Fenner

Introduction

I have chosen the title *Nature, Nurture and Chance: The Lives of Frank and Charles Fenner*, because I think that the first three words encapsulate the three elements that determine the lives of all humans. In one way, quite apart from the changes in the world around us, my father and I have had very different careers, yet my life, of which I know much more than I could hope to find out about his, clearly demonstrates the great importance of all three.

My father, Charles Fenner, was born in 1884 and died in 1955, I was born in 1914, and this book was published in 2006; a period of 122 years, during which the world has changed more than at any other time in human history. This book covers the period from 1895, when Father first got a job, until the present. He grew up in a poor family, in the country; I grew up in a middle class family, in the city. Each of us had the same two great loves in our intellectual lives: a love of science and a love of writing. The first 11 chapters (Part I) deal with my career, the next six (Part II) with my father's life, and the last chapter deals mainly with my life but also contains reflections on the contrasting lives of father and son. The detailed information is located in two large files in the Basser Library, Australian Academy of Science, Canberra; File 178 for Charles Fenner's life and File 143 for mine.

Chapter 1 describes my childhood as the second of five children and contains a description of family life. Chapter 2 describes my life at the University of Adelaide, where I initially enrolled in Science and transferred to Medicine in my second year. I was introduced into research by involvement with the Board for Anthropological Studies' expeditions into Central Australia and my research on Aboriginal skulls in the South Australian Museum, which formed the basis for the award of the degree of Doctor of Medicine in 1942.

Chapter 3 describes my career in the Australian Army in World War II, an experience that largely determined my subsequent career. Before enlisting, I obtained a Diploma of Tropical Medicine at the University of Sydney, which, after 13 months in the Middle East, led to appointments as pathologist to a 1,200-bed hospital in north Queensland for nine months and then as a malariologist in New Guinea. My future wife, Bobbie Roberts, was a transfusion expert in the hospital; we married when we were both in Melbourne during a short break I had from New Guinea. As a malariologist, my research interests switched from physical anthropology to infectious diseases and led to my acceptance as a research worker with Australia's leading virologist, Macfarlane Burnet, on discharge in February 1946.

Chapter 4 describes my immediate post-war career at the Walter and Eliza Hall Institute in Melbourne, where Burnet suggested that I should work on the

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experimental epidemiology of ectromelia, a disease of mice caused by a virus which he had shown was related to vaccinia virus. I spent two and half years doing very interesting work with this disease, especially investigations about what happened during the week-long incubation period. Although the Hall Institute was a very lively place, during the days before air travel we saw very few international visitors, so Burnet arranged a year's work for me at the world's leading medical research institution at the time, the Rockefeller Institute of Medical Research in New York. Here I worked on mycobacteria with a charismatic French-American, René Dubos, who later became an environmental guru. While there, I received an offer of the Chair of Microbiology in The Australian National University (ANU), which I accepted.

The rest of Part I describes my life in the ANU. I was Professor of Microbiology in the John Curtin School of Medical Research (JCSMR) from July 1949 to September 1967. Chapter 5 describes the administrative and domestic arrangements during those 18 years. Bobbie and I had gone to England to meet fellow professors and Sir Howard Florey in July 1949 and, after six months travelling around Europe, we arrived back in Melbourne in February 1950. There were no laboratories in Canberra, so initially I worked again in the Hall Institute, then, from November 1952, in temporary laboratories which had been built in Canberra, and, from 1957, in the permanent JCSMR building. Chapter 5 also includes descriptions of the house we built and interesting trips that I made to Indonesia in 1956, to China in 1957, to India in 1960–61, to Churchill College in Cambridge in 1961–62, and to Moscow State University in 1964.

Chapter 6 summarizes my research during that period. Initially, I continued work on mycobacteria, principally on *Mycobacterium ulcerans*, but from February 1951, with two assistants and extensive collaboration with ecologists in the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the principal theme was the newly introduced myxoma virus and the evolutionary changes in its lethality and the genetic resistance of rabbits. This work culminated in my second book, written in collaboration with the senior CSIRO ecologist, Francis Ratcliffe, entitled *Myxomatosis* and published by Cambridge University Press. From 1957, I also carried out laboratory experiments on the genetics of vaccinia virus and I spent most of my time in 1965–66 writing a 900-page book, *The Biology of Animal Viruses*.

In 1967, the Head of JCSMR, Sir Hugh Ennor, resigned from the ANU to take a senior post in the Commonwealth Public Service. As described in Chapter 7, I applied for and was appointed Director of JCSMR. I came to the position just as the governance had shifted from a School Committee (the professors) to a Faculty/Faculty Board structure. My period in the post, 1967–73, was a time of considerable expansion, with the establishment of several new departments and the replacement of retiring senior staff, all of which demanded much of my time.

I found that I could not supervise research without being involved in bench work myself, so I filled in my spare time by writing review articles and books. The first, with the collaboration of a former PhD student, David White, was a textbook for medical students, *Medical Virology*, published in 1970, and the next a second edition of *The Biology of Animal Viruses*, with four co-authors, published in 1974.

The other institution that has played a major part in my life in Canberra is the Australian Academy of Science (AAS), and Chapter 8 describes the many aspects of its activities with which I have been involved. I am the only surviving Fellow of the initial elections, in 1954. From 1958–61 I was Secretary, Biological Sciences, which greatly broadened my interest in biological and environmental sciences. From 1969–82 I was involved with Academy committees dealing with environmental problems. In 1978, with Lloyd Rees as co-editor, I prepared a history of the first 25 years of the AAS. In 1984, I initiated donations to establish annual conferences on environmental problems, which have been held annually in the Dome since 1988. I was also instrumental in introducing video histories of Fellows, a concept which has been promoted by Council since 2001 for as many Fellows as possible.

In 1973, approaching the end of my appointment as Director of JCSMR, I was appointed Director of the newly created Centre for Resource and Environmental Studies (CRES), as described in Chapter 9. I resigned from all medical science committees except those concerned with smallpox, but having been appointed to the major international environmental committee, the Scientific Committee on Problems of the Environment (SCOPE) in 1971, I was appointed Editor-in-Chief of SCOPE publications, 1976–80, and attended all meetings of the SCOPE Executive Committee. Chapter 9 contains a summary of the activities of CRES during its first six years (1973–79).

Chapter 10 describes my participation in the World Health Organisation (WHO) Intensified Smallpox Eradication Program. Initially, I served on its major research committee, which consisted of poxvirus experts, then on several of the International Commissions for the Certification of Smallpox Eradication, in Africa, India and China, and from 1977 to 1979 I was Chairman of the large Global Commission for the Certification of Smallpox Eradication. The 1979 meeting of the Global Commission agreed that smallpox had been eradicated globally and set out recommendations for steps to be taken in the post-smallpox world. As Chairman of the Global Commission, I presented this report to the World Health Assembly in May 1980, where it was unanimously approved.

Chapter 11 describes my career as a Visiting Fellow in JCSMR after retirement in December 1979. It includes an account of the committees set up to see that the recommendations of the Global Commission on the Certification of Smallpox Eradication were carried out and subsequent national committees concerned

with the use of smallpox as a bioterrorist weapon. The recommendation that occupied most of my time was the production of a book describing the campaign; I was senior editor of a massive book, *Smallpox and its Eradication*, which was published by WHO in 1988.

I still work at JCSMR every weekday, usually from about 7 am to 3.30 pm, for most of that time sitting in front of a word-processor and, during my 'retirement', writing some 140 papers and book chapters and 14 books (including new editions). The books include the textbooks on medical and veterinary virology, a book on the orthopoxviruses and another on monkeypox, another book on myxomatosis, a history of microbiology in Australia, a history of the JCSMR, and the 50-year history of the Australian Academy of Science. This chapter also records the receipt of several prestigious awards, including the Japan Prize, the Copley Medal and the Prime Minister's Award for Science.

Bobbie and I were also able to take some more leisurely trips overseas, including six months in the US National Institutes of Health as a Fogarty Scholar. In 1989 Bobbie had a colonectomy for carcinoma of the colon; five years later she had secondaries that did not respond to treatment and she died in December 1995.

Part II of *Nature, Nurture and Chance: The Lives of Frank and Charles Fenner* consists of six chapters describing the life and career of my father, and a final chapter, 'Reflections'.

In contrast to my numerous flights overseas (see Part I), my parents travelled overseas, by ship, on only two occasions. In 1931, when my father was 47 years old, he was chosen as one of the Australian delegates to the Centenary Meeting of the British Association for the Advancement of Science. He and my mother travelled to England, via the Gulf of Suez, on the *Balranald*, and back around South Africa, on the *Jervis Bay*. The second trip was in 1937, when they went to North America and Europe, returning to Australia via South Africa, across the Pacific Ocean on the *Monterey*, the Atlantic on the *Queen Mary*, to South Africa on the *Stirling Castle*, and across the Indian Ocean to Adelaide on the *Anchises*. This trip was funded by a grant from the Carnegie Foundation and was focused on educational matters.

On both of these trips, Father kept a diary, in which he recorded as much as he could of the activities each day, often inserting drawings and photographs of items of interest. In 2002, I had the diaries from both trips typed up. They are quite long, the 1931 diary containing 131,244 words and the 1937 diary containing 208,403 words. They are so revealing of the character, interests and relationship between husband and wife, and reveal so much of his ideas on both education and science, that I have included selected and edited passages from them in this book. On both trips, Father's interests in geology and human geography appear on many pages. There are some comments on educational matters in the 1931 diary, but many more in the 1937 diary. Another feature

that the reader will gather from the diaries is that Father suffered from gastric problems and could not have made the trips without the support of his wife Peggy, who carried out all the repeated packing and unpacking, and took care of him when he was ill.

Chapter 12 describes briefly the lineage of the Fenner family, which goes back for many generations in Germany and three generations in Australia; extracts from the diaries on visits to Germany constitute 80 per cent of this chapter.

Chapter 13 describes Father's childhood, his education at the University of Melbourne, which he entered as a student teacher, received a scholarship and graduated BSc with First Class Honours in Geology and Biology. He married another student teacher in 1911. She gave up teaching when her first child was born in 1912. Father rose rapidly as a teacher and educational administrator, being appointed Principal of the Ballarat School of Mines in 1914 and carrying out research on physiography in his spare time.

Chapter 14 describes Father's career in the Education Department of South Australia, in which he was Superintendent of Technical Education from 1916 to 1939 and Director of Education from 1939 until 1946, when he retired because of ill health. He suffered from a stroke in 1954 and died in 1955. In 1990, Bernard Hyams wrote a long article about my father in the journal *Biography*, entitled 'Charles Fenner: Scientist Who Would Be Administrator'. The abstract of this article reads: 'The career of Dr Charles Fenner in Australia tells us much about the history of education and educational administration in that country. The struggles undertaken by this gentle scholar to advance the cause of technical education emphasizes two of the dominant characteristics of Australian public education: resistance to vocational training and the tradition of recruitment of administrators from the rank and file of teachers.' Hyams' essay is published almost in full, followed by contributions from several South Australian educationalists. This formal account is supplemented by Chapter 15, which consists of extracts dealing with educational matters taken from his 1931 and 1937 diaries.

As described in Chapter 16, there is no question that Father lived a double life, indeed, a triple life, for he was the loving and life-long husband of Peggy (née Hirt) and father of four boys and one girl, as well as being an educational administrator, and, at the same time, he was an important figure in Australian science, both in original research and as a science communicator. While at the Ballarat School of Mines, he published papers on the geomorphology of Werribee Gorge, for which he was awarded the degree of DSc in 1917. In 1920, he received the first award of the Sachse Gold Medal of Royal Geographical Society (Victorian Branch) and, in 1929, the Syme Prize of the University of Melbourne for work on the geography of South Australia.

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While in Adelaide, he wrote numerous papers on the geomorphology of the Mount Lofty Ranges and books for both university and school students on the geography of South Australia, and, from 1920 to 1940, he was the Lecturer in Geography at the University of Adelaide. In addition, from 1916 until 1939, he wrote fortnightly 'Science Notes' for the Melbourne weekly magazine, *The Australasian*. He was a valued member of the Royal Society of South Australia and the Royal Geographical Society of South Australia, serving various offices, including President, in both. He was the first recipient of the John Lewis Gold Medal of the Royal Geographical Society of South Australia.

Chapter 17, the longest chapter in the book, supplements this formal account of his life as a scientist with enthralling extracts from his diaries, which reveal a truly remarkable breadth and depth of knowledge, considering that there were few radio and no television programs in those days to keep Australians in daily touch with the rest of the world.

Finally, in Chapter 18, I recall close personal friendships from all periods of my life and reflect on 'chance', the contrasting opportunities in my life and my father's.