The archives of Harold Carter are stranded in his daughter-in- law Margaret Carter’s care at Orpington, Greater London.

Together with others, I seek the help of Australian wool growers to have these valuable archives returned to Australia where they rightfully belong.

Dr Harold Burnell Carter, (1910 -2005) made a significant contribution to the development of the Australian Merino. His contribution was of economic and historical significance and revolved around the unique characteristics of the Merino’s skin and the capacity of the Merino to produce large quantities of fine silky soft fibres; fibres keenly sought after by the world textile trade ever since the 19th century.

Carter created a unique understanding of the productivity of the skin of the Merino with his intense observation under the microscope of skin sections taken from many thousands of Merinos. Carter worked out how the relationships of the primary and secondary fibres and the suint and wax glands of the skin of the Australian Merino influenced wool production and wool quality.

My understanding of the significance of Carter’s work was richly enhanced on one balmy English summer afternoon in 1994, when Dr Jim Watts and I visited Dr Carter at his home “*Yoebank”* in Congresbury, a typical English village in North Somerset. Sitting in his garden, while his wife Mary served afternoon tea, Carter told us the story about his leaving Australia and the CSIRO in May 1954 to work in the UK where he hoped his research would be appreciated and supported.

As a young veterinary science graduate from Sydney University, Carter’s first job in 1933 was with the wool, stock and station agents The Australian Estates Company Ltd. Under the aegis of the C.S.I.R. (later CSIRO) and the McMaster Laboratory, University of Sydney’s Veterinary School, Carter was presented with the challenge of discovering why, on some of Australian Estates properties, sheep experienced serious body fly strike, and on others very little.

A field headquarters was established at Tyrie, a 32,000 acre Merino sheep station near Dandaloo on the Bogan River in New South Wales. His experience of the animals and the environment of Australian wool growing and of the men and women involved in its production, set Harold thinking deeply, and to focus upon the question that would occupy him for the rest of his life, “What must we know about the Australian Merino in order to achieve its greatest economic value as a producer of fine wool”

After looking at thousands of sheep, Carter with an inquisitive mind, realised the answer was in the sheep’s skin.

Setting up a mobile laboratory in a second-hand Chevrolet Ute, Carter then initiated the first scientific examination of skin of the Australian Merino. Travelling between the various Australian Estate properties, he developed the skill of taking skin sections from sheep, (skin histology) and examining these skin sections under the microscope to observe the relationship of the skin wool follicle groups, -the primary and secondary fibres, wax and suint glands and then relating this knowledge to the subjective assessment and performance of the individual animal.

Carter then joined CSIRO where he pursued his research and later made a significant contribution to the design and establishment of the CSIRO’s Ian Clunies Ross Animal Research Laboratories at Prospect in Sydney. Carter’s original work was continued in later years at Prospect by Drs. Jackson, Lax, Maddocks and Moore, and others, including Dr Jim Watts.

Sir Ian Clunies Ross 1899- 1959 a veterinarian, was appointed Executive Officer of CSIR in 1946 and then Chairman of CSIRO from its inception in 1949 until his death in 1959. Clunies Ross, a champion of CSIRO, particularly research for the primary industries, was determined to have CSIRO at the cutting edge of new knowledge in what became known as the “post-war research boom”. Clunies Ross’s wife Janet, (nee Carter) was related to Harold Carter, and Clunies Ross was initially very supportive of Harold Carter’s work.

Following the end of the Second World War, Clunies Ross initiated a scheme to send wool industry scientists to Edinburgh University in the UK to learn about quantitative genetics and to bring back this new scientific knowledge to Australia.

As Jim Watts and I enjoyed tea and scones in his garden, Carter explained that by the end of the Second World War, the British War Office had assembled a team of the best mathematicians that could be found. One of their tasks was to calculate the intensity of bombing patterns over German cities to achieve the allies’ target objectives. At the end of the war, the British Government had to decide what was to be done with this team of now unemployed mathematicians. As the British people had gone perilously close to starving during the war, the decision was made to send these mathematicians to Edinburgh University which was renowned for agricultural research. There the mathematicians’ challenge was to increase food production. Food protein became the focus, and the pathway chosen was to improve the productivity of pigs, poultry, beef and dairy cattle, and sheep. Quantitative genetics was the method chosen.

A full explanation of quantitative genetics would extend to many pages, but for the sake of understanding by the lay reader, - *‘Quantitative genetics is one of the disciplines of genetics dealing with the mechanism of quantitatively inherited traits. Classical quantitative genetics is also called*[*statistical genetics*](https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/statistical-genetics)*or biometrical genetics, as the study of this discipline was basically to use statistical analysis for detecting possible*[*genetic*](https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/genetics)*models for designed*[*genetic populations*](https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/population-genetics)*’. (J. Gai, J. Lu, in*[*Brenner's Encyclopaedia of Genetics (Second Edition)*](https://www.sciencedirect.com/referencework/9780080961569/brenners-encyclopedia-of-genetics)*, 2013).”*

It is not difficult to imagine that these young enthusiastic wool scientists returning to Australia from Edinburgh, their heads swimming with all this new knowledge about mathematical genetics, would soon run into conflict with Carter, committed as he was to the biology of the skin as the production powerhouse of the Merino.

It would seem that Clunies Ross sided with the returning wool scientists; the Edinburgh scheme being his initiative. Conflict erupted between these enthusiastic quantitative geneticists and Carter which was to prove be the undoing of Carter.

Years later in 1994 when Carter was recounting all this, the pain of his work being discredited was still very apparent. The vindictive opposition he encountered was particularly hurtful. I remember my feeling of horror when Carter described how his truck was broken into and his laboratory equipment destroyed.

By 1953 Carter had had enough, and a letter held by his family dated 29th of December of that year indicate that it was confirmed by Hugh Donald, head of the Animal Breeding Research Organisation (ABRO) in Scotland, that Carter had decided to leave Australia for a position at ABRO.

We know from Mary Carter’s letters that following the complete breakdown of her husband’s relationship with CSIRO and prior to their departure to England in May 1954, they both made a trip to Victoria to visit Dr Pat Lang, “*Titanga”* at Lismore, Bill Weatherly, “*Woolongoon”* at Mortlake and finally staying with Alan Ritchie, “*Blackwood”* at Penshurst. All these gentlemen were innovators and supporters of research and industry research bodies. It would seem from Mary’s letters that they were investigating the possibility of finding a parcel of land on which Harold could run a mob of Merinos and continue his research privately.

In any event it would seem that Peter Speakman from Leeds University meeting Carter at an International Wool Textile Organisation (IWTO) in Sydney, encouraged Carter to accept the position in Edinburgh with the Animal Breeding Research Organisation (ABRO).

It is hard to imagine why Carter would have taken this course as it was like jumping from the fat into the fire, the conflict he left behind him in Australia was there to greet him at ABRO. By 1963 there had been a total breakdown with his relationship with the ABRO hierarchy.

There followed a six-year period at the Agricultural Department of Leeds University, where Carter kept his flock of merino sheep at the University’s experimental farm, Hedley Hall. During this period he entered into a productive working relationship with David Knight, director of the UK’s largest topmaker, Sir James Hill & Sons.

Carter and his wife Mary, retired to “*Yeobank”* in 1969. Here Carter continued with the second component of his life’s commitment to a better Australian Merino through seminal historical research on its origins (“*His Majesty’s Spanish Flock*”, 1964) and bringing to full light, in the most complete and fully researched biography on the life and achievement of Sir Joseph Banks (“*Sir Joseph Banks*, 1743-1820”),1988.

Harold died in February 2005 and Mary three years later in 2008.

Whilst Clunies Ross was renowned as a leader for promoting the research successes of CSIRO, he failed as a research leader. The failure to resolve the conflict between his quantitative research team and his skin biologists, led by Carter, not only destroyed the career of one of Australis’s eminent wool scientists, but started an argument in the industry that rebounded for the next 70 years.

Had Clunies Ross and the many research and industry leaders who followed had the foresight to understand that quantitative genetics and skin biology are complimentary areas of research, and together with the traditional visual assessment skills of the stud breeder could have resulted today in a vastly enriched industry; one with finer, better processing wools and free, or almost free of fly strike and NONMULESED.

The cost of shipping Carter’s extensive archives to Australia is around $10,000.

I invite readers of this article to contact me directly if they are able to help financially or in any other way, including passing this article onto others who may be able to assist.

Finally I would like to acknowledge the assistance and contributions in the preparation of this article by Richard Carter dec. his wife Margaret Carter and my very good friend, Peter Morgan.

Peter Small.

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 9 January 2025.