

A LIFE OF
Ernest Starling

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*In memory of two teachers,
Sandy Ogston
and Peter Daniel
with gratitude and affection.*

Preface

When I compare our present knowledge of the workings of the body, and our powers of interfering with and controlling these workings for the benefit of humanity, with the ignorance and despairing impotence of my student days, I feel that I have had the good fortune to see the sun rise out of a darkened world . . .

—Ernest Starling, 1923

Medicine leans heavily on understanding how the body works. The study of the body's normal workings is physiology, and Ernest Starling was an exceptional physiologist who believed passionately that medicine could not advance without this contribution. As he was also a good physician, he was in the best position to ask the best questions—ones that could be answered by experiment. And this is how he spent a large part of his life.

Born in 1866 into a large Victorian family, Starling had an outstanding career as a student and doctor at Guy's Hospital. Rejecting the obvious life of a Harley Street physician, he launched himself into research and became the first full-time physiologist at Guy's. In 1899 he was made Professor of Physiology at University College, London (UCL) and worked there until his death in 1927, aged 61. He was center-stage in a remarkable British flowering of physiology, and contributed significantly to at least four separate areas of the subject:

1. The balance of hydrostatic and osmotic forces at the capillary ("Starling's Principle").
2. The discovery of the hormone secretin (along with his brother-in-law, William Bayliss) and the introduction of the word "hormone."
3. The analysis of the heart's activity as a pump ("Starling's Law of the Heart," "The Frank-Starling Law").
4. A number of fundamental observations on the action of the kidney.

These are the bare facts. Many of his contemporaries, including long-forgotten physicians and physiologists, were given knighthoods; Starling received nothing. The Nobel committee seemed to pass him by. The physiologist J.C. Eccles (a Nobel laureate) wrote, "This discovery [of secretin, the hormone] was recognized by the Nobel committee in 1913–1914 to deserve a prize, which surely would have been awarded but for the long period of suspension of awards during the 1914–18 war" (Eccles, 1971). Does the passage of four years wipe out a remarkable scientific achievement? Is Eccles' story true? There are clearly ways in which Starling's achievements didn't seem to meet with proper appreciation by the world, and I hope that in this account of his life I have thrown some light on this. Biographies often have an introduction in which the author protests the subject to have been "denied their proper rights by history," or declares that the "record is going to be put straight." This is that part of the introduction.

The medical historian Ralph Colp wrote, "The great English physiologist discovered hormones and the Law of the Heart. Although his name is remembered by his scientific successors, it has been forgotten by history to a curious degree" (Colp, 1951). True, though not totally forgotten, for two monographs—by Carleton Chapman (1962) and Jens Henriksen (2000)—give excellent summaries of Starling's life. In this book I have had the extra luck to access over a hundred Starling family letters, and the recollections of Ernest's grandson, Tom Patterson. I hope that these add another dimension to the story. After the beginning of the Great War there is a good deal more fine-grained detail of his life; it may be that his relatives, realizing that they had a famous man in their midst, began to keep letters relating to him. Thus the first consistent run of Starling's letters that survives was written to his mother during 1916, when at 50, he was a lieutenant-colonel in charge of gas training for the British Army in Salonika. From then on, he comes much more into focus: outspoken, and driven to fury by the medical establishment and the government.

Enquiry soon shows Starling's life to be bursting at the seams: his research, university politics, his anger, his strong views on medical education and the reorganization of UCL, his passion for mountains and his family and friends. There are two ways of dealing with such factual density—first to take each facet of his life, and deal with each ("scientist," "politician," "family man," etc.) separately from beginning to end. This is how the two previous accounts have chosen to cope. For myself, I find it disconcerting to have to switch back to the beginning of his life after each section. (Are we sure that all these Starlings are the same person?) So I have chosen a second, riskier way: to try and keep up with all the Ernest Starlings more or less simultaneously. I hope that the overall shape of his life is clearer this way, and, when we get to the end, it really *is* the end. Incidentally, the death of this remarkable man is strange, and not really explained.

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The Royal Society, London

The Wills Library, Guy's, Kings and St. Thomas's School of Medicine

The Public Records Office, London

The Karolinska Institute, Stockholm

The Royal College of Physicians, London

I am also indebted to Tom Patterson (Starling's grandson) and Phillida Sneyd (his grand-niece) for family letters and photographs.

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Contents

Chronology, xiii

List of Illustrations, xv

Prelude, 3

1. Hearts and Capillaries, 13

2. 1890–1899, 40

3. Secretin, Politics, and the New Institute, 52

4. Starling's Law and Related Matters, 77

Interlude: The Haldane Commission (1910–13), 99

5. The Great War, 105

6. 1918–1920, 122

7. Back to Research, 137

8. The End of the Trail, 155

9. A Life Surveyed, 171

Appendix I. Starling's Publications, 187

Appendix II. Publications from the Department of Physiology, UCL
(1899–1927) (Starling's Years), 197

Annotated Bibliography, 201

Index, 215

Chronology

- 1866 Born Islington, London. Son of Matthew and Ellen (née Watkins)
- 1880–82 Kings' College School, London
- 1882 Entered Guy's Hospital as medical student
- 1889 Qualified in medicine at Guy's Hospital
- 1890 Lecturer in physiology at Guy's Hospital. Met William Bayliss at University College London (UCL)
- 1891 Married Florence Wooldridge (née Sieveking)
- 1893 Bayliss married Starling's sister Gertrude
- 1893–98 Analyzed the formation of lymph, and showed importance of osmotic pressure of plasma proteins ("Starling's filtration principle")
- 1899 Described peristalsis
- 1899 Elucidated the function of the renal glomerulus
- 1899 Elected Fellow of the Royal Society, and Jodrell Professor of Physiology at UCL
- 1902 With Bayliss, discovered secretin.
- 1903 Appeared at the Old Bailey with Bayliss (the "Brown Dog" trial)
- 1905 Introduced the word "hormone" into the language
- 1909 Opened his new Institute of Physiology at UCL
- 1910 Gave evidence to the Haldane Commission (Medical Education)
- 1910–12 Devised heart-lung preparation, out of which emerged the Law of the Heart

- 1915–17 Major, Captain, then Colonel in the Royal Army Medical Corps, involved in gas defence.
- 1917–18 Chairman of the Royal Society Food (War) Committee overseeing the country's nutrition.
- 1920 Operated on for cancer of the colon. Two episodes of pulmonary embolism following the operation
- 1921–26 Investigated function of the kidney—notably with E. B. Verney
- 1923 Appointed first Foulerton Research Professor of the Royal Society
- 1927 Died at sea and buried at Half Way Tree, Kingston, Jamaica

List of Illustrations

- P-1 William Sharpey, 7
- P-2 Edward Sharpey-Schafer, 8
- 1-1 Matthew Starling, 14
- 1-2 Ellen Starling with her children, 15
- 1-3 Ernest Starling, at about age 20, 17
- 1-4 St. Cuthbert's, the Bayliss's house, 21
- 1-5 William Bayliss, 22
- 1-6 A capillary electrometer, 25
- 1-7 Florence Starling (née Wooldridge), 28
- 1-8 Gertrude Bayliss (née Starling), 34
- 2-1 Starling's ultimatum to Guy's, 43
- 3-1 The north wing of UCL, 53
- 3-2 The discovery of secretin, 56
- 3-3 A croquet party at Northwood, c. 1902, 59
- 3-4 The "Brown Dog" demonstration, 62
- 3-5 Court-room sketches of the "Brown Dog" trial, 65
- 3-6 Starling's new institute, 1909, 74
- 3-7 Starling's laboratory at the new institute, 75
- 4-1 H. N. Martin's heart-lung preparation (1881-82), 79
- 4-2 Howell and Donaldson's 1884 results, 80
- 4-3 Research leading up to Starling's heart-lung preparation, 81
- 4-4 One of Starling's illustrations of the heart-lung preparation, 83

- 4-5 Starling's curves from his heart-lung preparation, 88
- 4-6 Curves from Figure 4-5 replotted, 89
- 4-7 A kymograph trace from the heart-lung preparation, 92
- 5-1 Major Starling, about 1916, 107
- 5-2 Putting on the phenate-hexamine (PH) helmet, 108
- 5-3 The Macedonian front in the Great War, 112
- 5-4 Putting on the small box respirator (SBR), 114
- 6-1 The Job that Never Was, 126
- 6-2 Starling's sketch of his colon, 130
- 6-3 A dinner welcoming Starling back, 131
- 6-4 The UCL anatomy department, Gower Street, 133
- 6-5 (Sir) Charles Lovatt Evans (1884-1968), 134
- 6-6 Sir Henry Dale (1875-1968), 135
- 7-1 23 Taviton Street, behind UCL, 138
- 7-2 Starling's osmometer, 140
- 7-3 The heart-lung-kidney preparation, 143
- 7-4 Basil Verney (1894-1967), 144
- 8-1 Sydney Patterson (1891-1960), 156
- 8-2 Gleb Anrep (1891-1955), 162
- 8-3 Starling on a canal trip, 168
- 8-4 Florence, Ernest, and Muriel Starling, 169
- 9-1 Starling's portrait, UCL, 184

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