it remains problematic for three main reasons. First—as noted by Söderqvist himself—many factors influence the scientist's life. And in fact, Jerne's life is shaped not only by his inner motivations but also, for example, by social networks: relatives, friends, colleagues, and, last but not least, his wives and girlfriends. Söderqvist describes all these factors and in fact he delivers a modern biography, which considers the cultural environment of the scientist. Therefore, I have some doubts whether the "existential biography" really serves as a new methodological approach. I think the consideration of the "inner life" of a person only complements the variety of aspects which should be considered in biographical writing. Second, the analysis is sometimes rather meagre, and the explanation of why the inner life shapes Jerne's scientific theories is sometimes vague and speculative and not entirely convincing. There is no careful conclusive analysis. Third, when focusing strongly on Jerne's personal motivations and ideas, there is danger in adhering too much to his own interpretation of his life. Jerne loved the existential philosopher Søren Kierkegaard; Söderqvist loves him too, and the outcome is an "existential biography". Söderqvist explains the danger of a strong identification with the research subject, but the reader is left feeling uneasy.

Notwithstanding these criticisms, this biography is an important contribution to the history of science and medicine. It is a good read, it is very inspiring and—even if this is not its primary intention—it tells us a lot about the history of immunology. The book is above all a reminder of the need for personal aspects of a researcher's life to be considered much more than hitherto, and—using a phrase of the historian Peter Moraw—that the scientist does not leave his personality and social relations in the wardrobe when entering the lab.

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Shelley McKellar, *Surgical limits: the life of Gordon Murray*, University of Toronto Press, 2003, pp. x, 270, illus., £28.00, US$45.00 (hardback 0-8020-3739-9).

This book ought to be subtitled 'The last dinosaur'. Gordon Murray was a Canadian surgeon who was born in 1894 and died in 1976. He was educated and practised in the era of heroic individualism, achieving worldwide recognition for his contributions to various areas of surgery. He continued to practise until the early 1970s, by which time the surgical mould in which he was cast had become outmoded and his work was increasingly ignored by the medical community, and in one instance brought upon him a degree of opprobrium.

He was born in rural Ontario to an immigrant Scottish family and had impressed on him from infancy the values of education and hard work. In 1914 he enrolled to study medicine at the University of Toronto, a city with which he was to be associated for the rest of his life. The First World War intervening in his education, he enlisted as an artilleryman and rose to the rank of sergeant. He returned to his studies after the war and graduated in 1921. Determined to become a surgeon, he travelled to the United States and England (it is sometimes forgotten how many students came from abroad to study in England in these years—a good subject for a PhD). In 1927 he took up a position at the Toronto General Hospital.

From the start, Murray had an interest in surgical research but was very much a loner. His first well-recognized work was on the use of the relatively newly discovered drug heparin, which he initially used in the treatment of thrombosis and embolism. He then employed it to produce haematological states that enabled him to carry out vascular surgery, notably suturing vessels, for instance after the removal of an anuerism. After the Second World War he turned to heart surgery, operating on children with congenital defects. He did not, however, continue this work into the heart-lung machine era. Always considering himself a general surgeon, Murray moved on and turned his attention to the development of an artificial kidney. His machine seems to have had some success, although ultimately it was a device

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based on the design of the Dutchman Willem Kolff that was widely adopted. Murray then moved to kidney transplantation, but in an era before the immunity of rejection had been researched his success was limited to say the least. From here on it was a story of failure. First he tried to raise antisera in horses to treat cancer but the medical community remained sceptical. Next he turned to suturing the spinal cord in humans in the hope of curing paraplegia. The medical community's suspicion of his work became outright condemnation, especially since his results were presented with a shoddiness, not to say sleight of hand, that was easily spotted in a world much changed from the one in which he started.

This book might also be subtitled 'The history of a paranoid'. Murray often behaved with a secretiveness and hubristic attitude to his colleagues that undoubtedly stymied his career at times. His brilliance as an operator and the recognition of his early research, however, carried him through, indeed to the receipt of the élite Order of Canada. Although his later work did not receive the same sort of recognition as did his earlier studies, McKeller is quite clear that methodologically nothing changed. There was always a cavalier attitude to laboratory experiment and a rush to the clinical situation. He was reluctant to work in a team, relied on the case history as evidence, and took a blinkered view of the clinical trial. All these things were passable in his younger days, but in the 1960s and 1970s they rendered him a dinosaur.

McKeller tells this tale well but she also tries to do something else which is most welcome. She shows how Murray's rise to fame was integral to the wider growth in the public domain of the language of surgery as the medicine of miracle cures. Indeed so fêted was he by the press that his later work was hailed as promising great breakthroughs in cancer treatment and the cure of paraplegia. The media fostered the image of the surgeon as heroic individualist and it is hard to think this line did not foster the image in Murray himself. This is a plainly written account based on extensive research. Even more perhaps could have been made of the public image of the surgeon but it is good to have a biography of a relatively modern surgeon that attempts to place him in a broader context.

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Rina Knoeff, *Herman Boerhaave (1668–1738): Calvinist chemist and physician*, History of Science and Scholarship in the Netherlands, vol. 3, Amsterdam, Koninklijke Nederlandse Akademie van Wetenschappen, 2002, pp. xvi, 237, €35.00 (hardback 90-6984-343-0).

Rina Knoeff's goal is to prove the influence of Calvin on Boerhaave, to show that his religious ideas vitally informed all areas of his work including his natural philosophy, his medicine, and his chemistry. As she puts it, "nothing in Boerhaave's life was more important than his religion" (p. 1). This study can thus be seen as part of the new scholarship in the history of science, which recognizes the importance of extra-scientific ideas on important scientific figures of early modern Europe. Knoeff isolates two essential Calvinist tenets of Boerhaave's science: first, an appreciation of the wisdom of God in creation and, second, a recognition of God's overwhelming power, especially as compared to the inherent limitations of human beings. She contends that Calvinism provided an impetus to science because Calvin's understanding of God, as having determined everything absolutely, obliged man to study nature as his creation. The pursuit of science was intended to indicate man's thankfulness to God and to detect God's will in his creations.

Knoeff focuses on four specific themes: the charge levelled against Boerhaave that he was a Spinozist; Calvin's ideas on creation, providence, and knowledge as a fundamental influence on Boerhaave; Boerhaave's chemistry as a practical application of his Calvinism; the relationship between Boerhaave's chemistry and medicine. Each claim yields some interesting

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