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### "Maestro of Science: Omond McKillop Solandt and Government Science in War and Hostile Peace, 1939-1956 (Book Review)" by Jason Sean Ridler

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Jason Sean Ridler, *Maestro of Science: Omond McKillop Solandt and Government Science in War and Hostile Peace, 1939-1956* (Toronto: University of Toronto Press, 2015). Pp. 350.

The Defence Research Board (DRB) was founded after the Second World War to “carry out such duties in connection to research relating to the defence of Canada and the development of or improvement of Service equipment and material ... and [to] advise the Minister [of National Defence] on all matters relating to scientific, technical and other research and development which affect national defence” (p. 247).<sup>1</sup> The DRB’s first chairman was the remarkable Omond McKillop Solandt. He was the civilian face of defence science at a time when a nervous public realised that Canada was no longer protected by its geography and was only a polar flight away for a Soviet atomic bomber. That Solandt, a formidable scientist, bureaucrat and diplomat, has been largely forgotten does a disservice to his enormous contribution to the national security of Canada during the dangerous early years of the nuclear age. Jason Ridler addresses this oversight in his well-researched and long overdue work.

Along with the introduction and conclusion, the book is comprised of thirteen chapters that each end with a useful summary.<sup>2</sup> Ridler’s objective is twofold: to establish Solandt’s contribution to defence science in Britain and Canada during the Second World War and the early Cold War, and to use Solandt’s career as a map of British and Canadian developments in the science of war during this same period. He is successful in his objectives.

<sup>1</sup> See the official history of the DRB, Captain D. J. Goodspeed, *A History of the Defence Research Board of Canada* (Ottawa: The Queen’s Printer, 1958). See also C.E. Law, G.R. Lindsey, and D. M. Grenville, ed. *Perspectives in Science and Technology: The Legacy of Omond Solandt*, Proceedings of a symposium held at the Donald Gordon Centre, Queen’s University at Kingston, 8-10 May 1994 (Kingston: Queen’s Quarterly, 1994), and Alain Gelly and H.P Tardif, *Defence Research Establishment Valcartier 1945-1995: 50 Years of History and Scientific Progress* (Ottawa: Minister of Public Works and Government Services Canada, 1995). The DRB was dismantled in 1974, its functions absorbed into a reorganized Department of National Defence.

<sup>2</sup> Also included are two appendices containing excerpts from *The National Defence Act* related to the establishment of the DRB, as well as a helpful glossary of acronyms. Minor quibbles are a few typos and some factual errors (for example, John Diefenbaker’s government was elected in 1957, not 1956, p. 233) which closer editing should have caught, and the book has an inadequate index.

The first eight chapters of the book provide a chronological biography of Solandt from 1909 to 1946. Solandt trained in physiology and medicine at the Universities of Toronto and Cambridge. A gifted student, he was mentored by Dr. Charles Best, who achieved fame as the co-discoverer of insulin. But, upon finding himself in London during the Blitz, Solandt's considerable talents for managing and maximising research were harnessed to Britain's wartime scientific effort, and the practice of medicine was left behind.

Solandt made his name during the war as a pioneer in the field of operational research - "the application of scientific principles to solving complex problems of men and machines in operations and field trials" (p. 81). He was involved in various studies, ranging from analysing the medical problem of crush injuries caused by bomb-collapsed buildings to preventing carbon monoxide poisoning of tank crews firing their weapons with closed hatches. One of the more engrossing chapters of the book focuses on Solandt's experience as the only Canadian on the November, 1945 British mission to Japan that surveyed the effect of the atomic bombings of Hiroshima and Nagasaki, where he undertook research on blast casualties.<sup>3</sup>

But leadership, more than research itself, was where Solandt excelled. For a Canadian in an often hidebound and stratified British environment, Solandt's rise was rapid, and by 1945 he became superintendent of the British Army Operational Research Group. Along the way, Solandt learned the skill of negotiating the rivalries that invariably arose between scientists, civil servants, military officers, politicians, and industrialists - a skill that later served him well in Ottawa. In 1945, when the Canadian government went looking for someone to set-up and lead Canada's postwar defence research effort, Solandt was the only person considered. As Canada's new defence research tsar, Solandt became the only civilian on the Chiefs of Staff Committee, Canada's highest military decision-making body, and equivalent in rank to a Lieutenant-General.

The remaining five chapters of the book cover the period from 1946 to 1956. Thematically organized, these chapters are consequently

<sup>6</sup> An overview of Canada's scientific contribution to the Allied war effort is Donald H. Avery, *The Science of War: Canadian Scientists and Allied Military Technology during the Second World War* (Toronto: University of Toronto Press, 1998). See also George R. Lindsey, ed., *No Day Long Enough: Canadian Science in World War II* (Toronto: The Canadian Institute of Strategic Studies, 1997).

somewhat repetitious. Ridler explores the origins of the DRB and its structure and operations. He focuses on Solandt's rational leadership style as well as the relationships he formed with fellow members of the Board (from government, academia, industry, and the military) and others both inside and outside of government. As a doctor and civilian among soldiers, Solandt's interactions with military officers, particularly the other service chiefs, offer interesting anecdotes of key Canadian officials. These relationships proved challenging, as the services - and the Royal Canadian Air Force, the preeminent service of the time, in particular - could jealously guard their turf against perceived encroachment by the DRB. But in the end, Solandt deftly navigated Ottawa's bureaucratic politics, built a successful agency, and was second only to General Charles Foulkes, the powerful Chairman of the Chiefs of Staff Committee, in length of service as a chief. Ridler also examines Solandt's role as a diplomat, for one of the goals of the DRB was to leverage Canadian defence research to get access to classified American and British defence research. The DRB enjoyed a high reputation with both allies, and Solandt himself was so respected by his American and British colleagues that Brooke Claxton, Minister of National Defence for most of his tenure, once quipped that Solandt "knew more British secrets than the Americans, and more American secrets than the British" (p. 127-128).<sup>4</sup>

Ridler pays close attention to Solandt's involvement with the major defence programmes of the time. The Korean War led to the largest peacetime defence buildup in Canadian history, and the DRB expanded accordingly. Solandt's involvement in projects related to continental air defence (such as the McGill Fence, which led to the Mid-Canada radar line), Arctic research, as well as highly secret and sometimes controversial atomic, biological, chemical, and psychological warfare research are outlined. Specific armament developments are detailed; both successful ones such as the Heller anti-tank missile and the Avro CF-100 Canuck interceptor, and stillborn ones such as the Velvet Glove air-to-air missile and the Avro CF-105 Arrow interceptor

<sup>4</sup> The DRB's contemporaries were the Research and Development Board in the United States, under its chairman Vannevar Bush, and the Defence Research Policy Committee in Britain, under its chairman, Henry Tizard. Both envied the depth and breadth of authority over defence research that the DRB enjoyed in Canada. See G. Pascal Zachary, *Endless Frontier: Vannevar Bush, Engineer of the American Century* (Boston: MIT Press, 1999), and Ronald W. Clarke, *Tizard* (London, UK: Methuen, 1965).

(though not in enough detail to satisfy Arrow enthusiasts). Ridler devotes considerable space to Solandt's role as Canada's chief expert on atomic warfare and civil defence (Solandt was even present at Britain's first atomic bomb test in Australia in 1952, and had access to classified material from which Australians were pointedly excluded). He charts the evolution of Solandt's strategic thinking to where he recommended in 1956 that Canada's Services move beyond simply training to survive on an atomic battlefield and instead incorporate atomic weapons into their arsenals.

In 1956, Solandt wished to put involvement in military affairs behind him, but though top private sector and academic opportunities were on the table, he did not wish to depart government service at the time. He approached Prime Minister Louis St. Laurent and Minister of National Defence Ralph Campney about serving as a deputy minister or as president of the National Research Council. Their response was shocking: Solandt was bluntly told he was irreplaceable as Chairman of the DRB; therefore he would be denied any other government position so as to keep him there. In my opinion, this was shabby treatment given Solandt's record. Not surprisingly, Solandt felt that he was "driven out" of government service. Solandt enjoyed a varied and prominent career post-1956 until his death in 1993, perhaps worthy of a second volume to Ridler's biography, but one wonders what further contributions to this country Solandt might have made had he remained a civil service mandarin.

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