

view may find certain perspectives, such as tuition as a revenue stream for institutions, treated too lightly.

Overall, this is a helpful, well written book. The author asks the right questions, frames the issues in interesting ways, displays a knack for finding pertinent data, and demonstrates an admirable command of the relevant literature. Practitioners will find this a useful book. They will appreciate the conciseness with which various topics are treated. An index would have added to its value as a resource book, but it is sufficiently well organized that one can find a particular topic without much difficulty. The book also has a place in an academic setting. It would make an excellent text for classes on higher-education finance.

M. Christine King, *E.W.R. Steacie and Science in Canada*, Toronto: University of Toronto Press, 1989. xii+243. Reviewed by James P. Hull, Department of History, Okanagan College

The essence of what is wrong with this book is contained in its title. It should be called "E.W.R. Steacie and the National Research Council". Unfortunately, the NRC, which invited the late Dr. King to write this book, cannot bring itself to admit that its story is not the story of science in Canada.

The subject of the book, chemist E.W.R. Steacie, joined the NRC in 1939 and was President of the Council from 1952 until 1962, shortly before his death. After Christine King's own unfortunate death in an automobile accident, long-time NRC archivist A.W. Tickner helped prepare the manuscript for publication. In spite of his efforts and those of University of Toronto Press editors, the book suffers from being a manuscript unrevised by the author. The prose is too often awkward and the narrative disjointed. Thus, for instance, the discussion of Steacie's dissertation supervisor is puzzling and of little point, while the passage on the creation of NRC vice presidencies is very confused. Other shortcomings are more substantive. The assertion that the NRC was established "ostensibly as the result of Britain's concern that the dominions should each have an organization akin to its own newly created Department of Scientific and Industrial Research" (p. 45) is erroneous and misleading. A mounting weight of scholarship clearly shows that the traditional picture of the underdeveloped state of research prior to World War One, which King accepts, is wrong. As well, King's overly-rosy picture of inter-allied technical cooperation in World War Two and her story of early Canadian participation in nuclear development compare poorly with recent work by Zimmerman and Bothwell respectively. The assertion "that traditionally the country had made its mark almost exclusively by producing raw materials" (p. 129) in a context of post-WWII Canadian science policy is absurd. Similarly, the assertion that up to the Second World War Canada was a supplier of raw materials in exchange for British manufactured goods so as "to serve the clearly defined requisites of the British Empire" is completely ahistorical; such notions had been abandoned before Confederation.

What could have been an enlightening study of an important Canadian scientific administrator is instead the usual NRC hagiography and apologetics. King even tries to put the best possible gloss on Steacie's hopeless naivety during his trips to Germany of the 1930s and Russia of the 1950s. He went, he saw, he was gulled. As with so much NRC-supported history, it is puffery for the central and pioneering roles of the Council, roles which in fact the Council never played. This attitude is typified in the pompous characterization of "the Council's solemn role as keeper of science for Canada" (p. 57). In accord with this myth, and to dull not the NRC's luster, other government science is slighted. This applies both to other federal government science agencies, several of which pre-date the NRC, and the vigorous provincial research organizations. King, like too many others, equates Canadian science with Federal government science and the latter with the NRC. The Council's role in science is everywhere exaggerated. King quotes with approval Steacie's preposterous claim that the NRC was "largely responsible for the whole development of Canadian science" from the end of World War One to the 1950s (p. 135).

King, like Steacie, displays a pure science bias which cannot be justified in terms of either the mission or the history of the NRC. At times it is pure snobbishness, as in Steacie's remark that first rate people do "real" science and the third rate are relegated to applied projects (pp. 144–5). Ironically, Steacie himself was an industry consultant and one of those responsible for the federal government's Industrial Research Assistance Plan. But a reading of Steacie's speeches clearly reveals that either he never understood the history of industrial science in Canada or chose to misrepresent it. The same can be said for King. Among the most misleading aspects is the stress placed on contrasts among the NRC, academic and industrial environments for science. Such environments are different and the differences important. But more important, historically, has been the cooperation among the three sectors and the ease with which scientists have moved from one to another. This has been a conspicuous and positive aspect of the Canadian research structure, as Enros' massive biobibliography has documented, and it is that which should be stressed.

Readers of this Journal will be particularly disappointed by King's treatment of educational matters. The very important college textbook on physical chemistry co-authored by Steacie and Otto Maass is only mentioned in passing. Almost nothing is said about Steacie's connection with Carleton University, although he has been chairman of its Board of Governors. In general, there is not enough on NRC-university relations and what there is is one-sided. When university dissatisfaction with the federal government in general and the NRC in particular is admitted, we receive only a justification for the Council's position. The persistence of dominance by the humanities and the lack of research at Canadian universities is exaggerated to the benefit of the NRC's role. A similarly distorted view is given of the expansion of the university system in the 1950s and 1960s.

Perhaps the best illustration of this book's lack of analytical rigour is its treatment of the migration of scientists to and from Canada. King repeats the usual

trite cant about a brain drain and the loss of our best minds to the U.S. She also notes the problems created for the U.K. by the emmigration of its scientists to Canada. But the two issues are neither connected nor set in some larger framework. Did Canada have a net loss of scientists? Did Canadian emigration include a disproportionate number of the most talented scientists and how many later returned? Could the issue be better conceived as temporary local and sectoral imbalances? If industry could not absorb the full output of Canadian-trained scientists did this perhaps represent a lag in curriculum development? These are the types of questions King's book never asks, let alone answers. But these are the types of questions we would like answers to in a book which purports to be about science in Canada.

The list of this book's shortcomings is almost inexhaustible. In her introduction the author admits to having been handicapped by a lack of Steacie papers, a problem contributing to an overall superficiality. The technical language in the book at times makes it inaccessible to the non-specialist. The University of Toronto Press has provided the work with a scanty bibliography and index and a few unenlightening photographs. The choice of topics included reflects NRC narcissism. Thus there is a full chapter on relations between the NRC and the Civil Service Commission, a matter of vital concern to NRC empire-builders but to few others. The full King manuscript is held at the NRC and is available for consultation. Sadly, that is the form, and the place, in which it belongs.