

E.W.R. Steacie and Science in Canada. M. CHRISTINE KING. Toronto: University of Toronto Press, 1987. xii, 243 p. ISBN 0-8020-2667-2.

Born on Christmas Day 1900, when the South African War was in its second year, Canadian scientist and scientific administrator Edgar William Richard Steacie died two months before the Cuban Missile Crisis, in 1962. He came into the world in the dying moments of the Victorian age and departed from it a short time after the birth of the modern age. Throughout his life, Steacie drew inspiration from a vision of science that flourished in the nineteenth century. He was dedicated to the ideal of the unfettered pursuit of scientific truth, to a life of pure research and scientific independence. Yet, committed though he was to such ideals, Steacie was astute enough to understand and practical enough to deal with the mounting pressure for organized applied science. Indeed, he lived long enough to encounter the increasingly rationalized, bureaucratic, modern post-Second World War world into which science — and society — was quickly passing.

With an engaging warmth that is occasionally sprinkled with moments of gentle humour, Dr. King, who died accidentally shortly before publication, has presented the life of a man whose professional and personal qualities she obviously respected and admired. One of Canada's most accomplished scientists during this century, Steacie grew up in Westmount, Quebec. Initially wanting to follow in his military father's footsteps, he registered at the Royal Military College of Canada in Kingston in 1919. He soon decided, however, that his father's calling was no more to his liking than were his family's devout religious beliefs, which he also seems to have quietly set aside early in life. Steacie entered McGill in 1921. After taking an undergraduate degree in chemical engineering, he then shifted to the field of physical chemistry. Under the paternal guidance of Otto Maass, head of the chemistry department and himself a pivotal figure in the history of Canadian science, Steacie soon focused his attention on gas phase kinetics. His postgraduate work was a study of the intractable problem of free radicals, which became his lifelong scientific passion. His contributions to the unravelling of the mysteries of these atomic entities, together with his excursions into other aspects of chemistry, resulted in the publication of several books and a lengthy bibliography of articles in learned scientific journals. This work earned him national and international recognition as an outstanding scientist. Over the years, Steacie was asked to edit various research journals and to head several professional associations. He was also a frequently-sought guest lecturer all over the world. In addition, he was honoured with invitations to work for some of the most prestigious international scientific bodies, such as UNESCO and the International Council of Scientific Unions, and to join several of the world's most distinguished scientific societies, including the Royal Society (London), the National Academy of Sciences (United States), and the Soviet Academy of Sciences.

As the philosopher José Ortega y Gasset has written, there is at least one thing in which human beings have no choice, the circumstances into which they are born. The Second World War provided an ideal culture for the growth of government and bureaucracy in all areas of life. The wartime urgency of cooperation between government, industry, and science quickly evolved into a more permanent, intimate, bond. Steacie's first love may have been science, but the tug of duty in wartime started him off on his rise through the ranks of administration, a course that, for reasons that remain unclear, he found himself unable to abandon. It was perhaps a sign of the times that Steacie's success as a scientist seemed to bring him to the attention of administrators. If Maass was Steacie's professional father, National Research Council

(NRC) president C.J. Mackenzie was to be his mentor in his career as science administrator. Indeed, Mackenzie's towering paternal presence often overshadows Steacie in this book. It was Mackenzie who enticed Steacie away from McGill to the directorship of the NRC's Division of Chemistry; it was also Mackenzie, impressed with Steacie's running of the division, who asked him to move to Montreal to help John Cockcroft, the renowned British physicist, to sort out the serious administrative problems which had emerged at the Montreal Laboratory, Canada's wartime centre for atomic research. It was Mackenzie, too, who named Steacie vice-president (scientific) of the NRC in 1950, and who two years later did not hesitate to choose him as his most suitable successor to the presidency of the NRC, an office Steacie would hold until his death ten years later.

In his last years, Steacie confessed: "The running of the NRC has been fun. Off-hand I would say that I would have been happier if I had remained a chemist." Indeed, if we believe Dr. King, Steacie often found his administrative responsibilities onerous. His wish was to practice science in the manner of his Victorian predecessors, whom he undoubtedly imagined to have been solitary gentlemen scientists free from all external constraints to indulge in the carefree pursuit of scientific truth. Instead, he was destined to fight to preserve this eroding scientific freedom. As a scientist, Steacie jealously guarded his own independence. In all his administrative posts, from the directorship of the McGill chemistry department to the presidency of the NRC, he was equally determined to shield his staff from unnecessary bureaucratic intrusions. In fact, an ironic message emerges from this book: Steacie's undoubted success (and popularity) as an administrator rested not only on his acute intelligence and force of personality; his administrative actions were galvanized by a fundamental aversion to the operational inertia which administration can engender, a fact which explains his vigilance — some accused him occasionally of paranoia — concerning the freedom of his institution and professional staff from outside meddling.

Fate, then, seemed to have placed Steacie in the world of administration to do battle for the development, prosperity, and integrity of Canadian science, three aims not always easy to reconcile. In waging a violent pre-emptive campaign against the ominous implications of the recommendations of the 1958 Royal Commission on the Civil Service Commission concerning the government's possible role in the hiring of public professional staff, however, he was swimming against the tide. (Steacie did not live to contend with the Glassco Commission's report on government organization, which addressed the issue of managing government science.)

There are some things which we do not learn, or learn enough about, from this biography. Readers interested in the social and technical aspects of the sciences may be disappointed by the book's sparse detail concerning Steacie the scientist. Rather, much of the book concentrates on his arguably more significant administrative and policy-making role in the development of Canadian science, even though Steacie continued to be an active, contributing scientist throughout most of his life. We never learn much, for example, about Steacie's habits in the laboratory or about his relationship with fellow scientists. The dominant impression one gets is of Steacie sitting behind a desk dictating a memo, or seated at a table conducting a meeting, or making a policy decision.

Perhaps because it was too complicated to explain to nonscientists, Steacie's work in chemical kinetics receives only cursory treatment. In addition, the reasons for Steacie's fascination with radical chemical kinetics remain obscure. One is tempted to speculate,

however, that the kinetics of free radicals contains the governing metaphor of Steacie's life. Free radicals are atomic particles whose peculiar behavioural feature is their momentary independence from any molecular structure as they travel (at invisible speeds) from one such structure to another triggering sometimes spectacular chemical reactions. Such a phenomenon, in which atomic entities were thought to be "wandering around unattached to a proper molecule, even if only for a fleeting flicker of time, outraged all sense of chemical propriety," writes King. Could it have been this anthropomorphized moment of unaccountable independence from structure that so attracted Steacie to atomic radicals? It seems implicit in King's account that Steacie was himself leery of structures of control: from the formality of Westmount to the discipline of military life to the commitments demanded by religious observance and faith to the bureaucratic entanglements of government — we could also add his awareness of Canadian science's dependent, colonial status — he often seemed to regard the growth and superimposition of structure upon his life and that of the NRC with suspicion, as a threat to professional and institutional autonomy.

Finally, the book says nothing about the practical significance of Steacie's scientific work, save for a brief unsatisfying prefatory allusion to its obsolescence. Radical kinetics largely remains a fascinating intellectual problem, which may be exactly what it was for Steacie. Indeed, this last statement brings a final series of questions to mind. Did pure science entail for Steacie a condition of absolute freedom? Did it make available (to his mind) a singular opportunity to transcend the realms of politics, ideology, and, ironically, scientific technocracy, which, for him, may have portended the perversion of the pursuit of objective knowledge and the invasion of radical relativism into science? Was it such aspirations that underlay his passion for science and his agenda — and effectiveness — as a science administrator?

The state of the historical record seems to offer little hope of bringing these questions to a final resolution. King was labouring under a major handicap: Steacie "left almost no correspondence, diaries or personal notes." This documentary silence, King tells us, reflects something in the man's self-effacing nature. It is also an unfortunate irony, for Steacie had a taste for the history of science. It remains, however, that King may not have fully exploited all the official correspondence. Records from the NRC's Division of Chemistry have certainly survived. Better use of these records might have provided insights into what divisional life was like under Steacie. In addition, distinctions between official and personal correspondence can be overdrawn. Perhaps the obvious needs to be stated. Official public records and professional correspondence are regarded with some justification as impersonal and bureaucratic. Rarely are they seen as sources of personal information. This generalization, perhaps increasingly valid, nevertheless exaggerates and misunderstands the nature of much of this correspondence and overlooks some of its characteristics. For example, a close reading of the social and personal information and language which is frequently found among the formulas and scientific exchanges in professional correspondence among scientists often does reflect aspects of personality, as well as offering evidence of its social function of establishing intimacy, distance, and rank. Business, or science, in other words, is not all business.

Those who are interested in the development of Canadian science in the important post-Second World War years will be grateful that Dr. King has bequeathed this work to us. As is often the case with writing in a relatively new field of history, this book succeeds in offering some local answers and also makes intelligent forays into some larger issues which need further research. Her book raises questions, for example, concerning how

Canadian scientists like Steacie have perceived the practice of science and the role of scientists in society. Despite the invocation of a number of examples to the contrary, such as Steacie's launching of the Industrial Research Assistance Program (IRAP), King's evidence seems to lend some credence, at least, to the judgement, particularly of the 1972 Senate Committee on Science Policy, that Steacie was an apostle of pure science, that he often sought to establish a radical disjunction between the laboratory and the outside world, which resulted in the neglect of applied science and national industrial research. Indeed, there were occasions when Steacie seemed to downplay any prescriptive pretensions on the part of science, and to abjure any responsibility for the social consequences of scientific discovery. The role of science, he seemed to think, was confined to penetrating the mysteries of nature. The purposes for which this knowledge might be used was a matter for the political process and society at large to decide. In *defence* of Steacie, King suggests, however, that Steacie was merely trying to redress an imbalance in Canada between pure science and utilitarian science, and that his thinking on the matter evolved. Clearly, King chose wisely when she decided to study Steacie, a key figure in this modern incarnation of a central debate about science which, in Canada, stretches back as far as the first half of the last century.

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Other Losses: An Investigation into the Mass Deaths of German Prisoners at the Hands of the French and Americans After World War II. JAMES BACQUE. Toronto: Stoddart, 1989. xxi, 248 p. ISBN 0-7737-2269-6 \$26.95.

James Bacque has written an extremely controversial book. In *Other Losses*, Bacque maintains he has uncovered yet another terrible chapter in what was the bloodiest struggle in human history. In 1945, as the Third Reich was crushed between the two allied fronts, millions of German soldiers were captured and held in prison camps on the Western Front. The prisoners of war held in the camps run by the Americans and the French were subjected to deplorable conditions and were deprived of reasonable rations, to which they were entitled under the Geneva Convention. According to Bacque, the conditions in these camps were the result of a deliberate policy of the Allied commander in chief, Dwight David Eisenhower. Ike had decided to teach the Germans a lesson.

To most Canadians and Americans, Bacque's theory comes as a complete surprise. When Peter Jennings of NBC News reviewed the book on national television, American historians were sent into a state of near apoplexy. "Could Ike have done such a thing," they asked themselves, "and how come we did not know about it?"

Of the existence of these camps, there is no question. Of the conditions in the camps, there is also little doubt. Bacque has not uncovered anything new here. True, there are no historical accounts of these camps, but there is enough evidence in popular literature. In *Group Portrait with Lady*, Heinrich Boll's powerful novel of Germany before, during, and after the Second World War, there is a reference to two of the camps Bacque describes:

"... a healthy German male of twenty-four, suffering only from slight under-nourishment, do you know what was in store for him? Sinzig or Wickrath, those hellish POW camps — and naturally we didn't want that."