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Book Review

Frontier Science: Northern Canada, Military Research, and the Cold War, 1945–1970. By Matthew Wiseman. University of Toronto Press, 2024. 329 pp.

Reviewed by Ken Coates*

Matthew Wiseman has written a timely book. In the middle of the 2020s, Canada is increasingly preoccupied with a combination of Arctic sovereignty, northern security and defence, and scientific investigations. Fuelled by Prime Minister Mark Carney's repeated references to a new Arctic strategy and highlighted by a promise-rich Fall 2025 budget, the Canadian North is getting more attention than it has received in generations. Wiseman's study of Arctic science during the Cold War reminds us of a time when Canada's commitment to the Far North was more urgent, science-based, and, most importantly, far-reaching, based as it was on the prospect of war with Russia, a nuclear power with long-standing Arctic capabilities and aspirations.

Wiseman's main argument is that Canadian scientists played a fundamental role in developing the nation's response to the Cold War, providing practical advice on an urgent basis at a time when Canada faced an existential threat in its Arctic regions. The author does a fine job of situating the surge in Arctic science within the political and military tensions of the postwar world, when Russian aggressiveness and northern expertise put the country on its heels in terms of military preparedness. As Canadians cope with the relatively modest military threat posed by Russia, we have forgotten the age when the threat of a Russian ICBM (intercontinental ballistic missile) attack dominated North American nightmares.

The country was, in 1945, ill-prepared for military engagement in the Far North and lacked a basic understanding of how to conduct military operations in Arctic environments where they faced an unknown but potent threat from the Union of Soviet Socialist Republics. A large and diverse group of scientists was

mobilized to prepare the Canadian military for northern activities, responding to the short-term needs of the Canadian armed forces and laying the foundation for a rapidly expanding economic, social, and political presence in the Far North.

Wiseman's study proceeds on a thematic basis, examining a wide variety of important topics. It starts with a study of the important Defence Research Northern Laboratory at Fort Churchill and some provocative studies of human adaptation to Arctic climates (few of which would get past modern ethics reviews, an issue that Wiseman considers at length). There are chapters devoted to entomology and biological warfare, as well as the technologies of northern military operations. The section on Operation Hazen, a major meteorological and geological study of Ellesmere Island, coordinated with the International Geophysical Year (1957-1958), is a particularly insightful examination of the challenges of polar research and the long-term benefits of extensive scientific study of a little-known area. Arctic radiation studies provide a stark reminder of the real—and widely anticipated—outbreak of nuclear war and the first-ever Canadian examination of the potential effects on Arctic regions.

There are portions of this excellent study that might have been recast. The diversion into the examination of Frederick Jackson Turner's famed "frontier thesis" is not particularly effective; there are lengthy digressions into Canadian historiography that will deter readers more interested in science and policy. The long-term impact of these scientific enterprises on Indigenous people and communities in the Far North is underdeveloped, as the author carefully explains. More comprehensive comparisons with American activities in Alaska would have been helpful, particularly through an examination of the leadership role played by the research-oriented University of Alaska Fairbanks and the absence of a comparable northern Canadian university based in the North and engaged with Arctic science (a gap that is being addressed through the continued evolution of Yukon University and the creation of Inuit Nunangat University). The story of Bill Pruitt, later a star Arctic researcher in Canada, is told only in small part; his later flight from the University of Alaska over the university president's wholehearted support of the peaceful use of atomic weapons in Alaska is a vital part of the Cold War tensions between Arctic science and militarization. These elements only highlight the utility of Wiseman's study as a launching pad for further academic research on the topic.

Frontier Science is not a celebration of endlessly impressive research successes. It documents the many challenges and shortcomings of Canadian scientific research. The extensive detail on the scientists and their wide variety of projects illustrates the difficulties—and enormous demands on them—of doing

foundational research in an area that was little explored scientifically. The study also reveals the unexpected long-term impacts of the military-inspired research activities. As Wiseman argues, the Cold War investigations and exercises laid the groundwork for future scientific, commercial, and administrative actions across the North. To a surprising degree, this book demonstrates that Cold War science underpinned Canada's still incomplete coming of age as an Arctic nation.

Wiseman's work is, appropriately and deliberately, Ottawa-centric and is strongest in the study of defence policy and government planning. His examination of the work of individual scientists and professional teams is first-rate. The study of the engagement with northerners and Arctic communities, as the author makes clear from the outset, is less comprehensive and would require additional community-based research. Wiseman makes it clear that Indigenous perspectives are essential to a full understanding of the impact of scientific research, pointing the way to important avenues for further research.

The overly long and complex conclusion reveals both the diverse nature and impact of Arctic military research, as well as the author's struggle to make sense of a broad and complicated story. This is not a theme that lends itself to easy or straightforward analysis and Wiseman has difficulty providing a succinct commentary on the role of Arctic military research in the North post-Second World War. His efforts to integrate Indigenous considerations, to situate scientific research in the broader "idea of the North," to document the difficulty involved with connecting military research to the "opening" of the Arctic during the resource booms in the 1950s and 1960s, among a variety of other themes, are admirable but a little distracting.

In the end, I had hoped for some commentary that linked the postwar developments to the contemporary preoccupations with Arctic security, Indigenous empowerment, resource development, and national priorities. *Frontier Science* ultimately argues that the postwar era was a distinct time and space, characterized by a preponderant interest in Arctic defence and scant concern for Indigenous inhabitants, and providing more warnings and context than lessons and ideas for contemporary politicians and policy-makers. That said, Wiseman's study is essential reading for anyone seeking to understand the development of the Canadian Arctic after the Second World War.

[*]**Ken Coates**, Professor Emeritus, Johnson Shoyama Graduate School of Public Policy, University of Saskatchewan; Founding and Senior Editor of the *Northern Review*.