THE FIRECRACKER BOYS. By DAN O'NEILL. New York: St. Martin's Press, 1994. 388 p., maps, b&w illus., bib., index. Distributed in Canada by McClelland & Stewart Inc. Softbound. US$14.95; Cdn$21.00.

Arctic Alaska narrowly escaped becoming the nuclear testing ground that Edward Teller of the U.S. Atomic Energy Commission (AEC) passionately hoped it would become. This book details how close the "Father of the H-Bomb" (and years later, the White House's promoter of Star Wars) came to having his way, the nature of his arctic scheme, called "Project Chariot," and the people and intrigues swirling around this other-worldly interval of arctic Cold War history. Before introducing Dan's epic tale to students in the first of several university seminars in Alaska, I had read it three times, cover to cover. Two of those readings even included delving into 61 pages of endnotes ("Notes," p. 308–369). But the first reading was for the book's whodunit and personal intrigue qualities: who were history's good guys and bad guys in Dan's assessment? A first reading of *The Firecracker Boys* as a riveting page-turner worked. My only pauses were to add names to a penciled list of people outside of Alaska to be sent copies as Christmas gifts in 1994.

Not many pages into the first reading, it was clear that I should treat myself to a more leisurely second reading. Project Chariot involved many more people and far bigger issues than I had realized. Some people, led by Leslie A. Viereck (p. 181), William O. Pruitt, Jr., (p. 195), and Don Foote (p. 205) had to make career-altering choices of conscience. These choices were thrust on them when they perceived that either the AEC or its research contractor, the University of Alaska, was distorting its own environmental research findings from the vicinity of the proposed test site. Such distortions were to buttress the AEC's public posture that detonating a series of buried nuclear bombs to create a demonstration crater and harbour in northwestern coastal Alaska posed no significant environmental or health risks. The site chosen for the nuclear "shots" was by Cape Thompson, at Ogotoruk Creek, halfway along the 100 km of coastline separating the Iñupiaq Eskimo communities of Point Hope and Kivalina. In today's hindsight—tinged with disbelief that such nuclear recklessness could ever have been proposed—it is not surprising that Viereck, Pruitt, and Foote emerge as the story's *troika* of exemplary heroes for inspiring Chariot's doubters and dissenters. What *is* surprising is to learn the magnitude of their heroism, and how their courage had to ripple upstream against currents of Cold War apathy, to rally others. Others included Howard Rock of Point Hope, who found both salvation and heroism in rising to oppose Chariot's nuclear scheme. With Tom Snapp of Fairbanks, Rock founded and published Alaska's first Native newspaper, the *Tundra Times* (p. 237). Far from the Arctic and Alaska, lives and historic events were also rallied by the Project Chariot scheme, in ways that Dan O'Neill's research brings to light. Barry Commoner in St. Louis, now standing beside Rachel Carson (*Silent Spring*, 1962) in the pantheon of environmentalism's founders, traces his induction to the time when he learned of the lichen-caribou-human food chain (p. 210) through Bill Pruitt's work and from correspondents in Fairbanks (p. 347).

Intrigue and influence swept clear through the White House and beyond. The Geneva meetings on peaceful uses of nuclear energy in September 1958, for example, featured many showings of an AEC film depicting Project Chariot's planned use of thermonuclear (H-bomb, as opposed to A-bomb) blasts, to create an arctic harbour in the first of three successive versions of the scheme. Soviet participants in Geneva watched the AEC's animated cartoon repeatedly, but denounced Chariot at this meeting as thinly disguised military research. Edward Teller and his Livermore team subsequently downscaled their design for Project Chariot, switching from thermonuclear to nuclear "shots" and reducing the yield from 2.5 megatons to 0.46 megatons (460 kilotons). The first downscaling was the result of a design miscue with "Neptune," a tiny underground test shot, in October of 1958 (p. 56). That small incident hardly instills confidence that secrecy-shrouded nuclear antics by "firecracker boys" were either well designed or in the public interest. Before it was over, Chariot had to be downscaled again, to 280 kilotons, or to 11 percent of its original design yield. Yet Chariot remained nearly three times the size of the "Sedan" shot of July 1962, which exceeded by five times the AEC's predictions of its fallout (p. 252).

In this tale, there are plenty of intrigues and epic confrontations to entertain fans of novels by Tom Clancy (*The Hunt for Red October*). There is George Rogers, economist in Juneau, bemused in 1958 at Edward Teller's warped sense of economic geography, by which Teller fantasized using a nuclear-excavated harbour near Cape Thompson to export coal mined from the other side of Alaska's Brooks Range. There are Al Johnson and Tom English in January 1959, ambushing AEC representatives with remarks about the AEC's "mendacity," and the circulation, in the same vein, of an anonymous verse at the University of Alaska (p. 184). There are diminutive Kitty Kinneeveauk and burly Dan Lisbourne in Point Hope, speaking their minds at the long-overdue 1960 public meeting disclosing the Chariot scheme to that Iñupiaq Eskimo community. There are the tireless doubters with the Alaska Conservation Society, who cranked out and mailed 1000 mimeographed copies of its *Bulletin* in the spring of 1961, thereby publicly laying siege to Project Chariot's propagandists.

So, who were the opponents to these greater and lesser heroes? On this question, O'Neill is a virtuoso artist who refrains from using unmixed black pigment from his palette. Even Edward Teller is portrayed in more than a unidimensional villain's role, despite the childish, intemperate way he treated the author, terminating their only chance for a face-to-face interview during Dan O'Neill's 7-year odyssey of research for the book (p. 300–301). Teller emerges as rhetorically skillful, and if not passionately devoted to particular truths, at least capable of using compassion artfully, as in his Commencement address at the University of Alaska in 1959 (p. 89) to support grand visions. Ideological unity about Cold

War risk-taking developed, top-down, between the AEC and the University of Alaska. The tragic side of William R. Wood was that he believed passionately in the well-being of the University of Alaska, but never—as its President—sensed essential distinctions between a university and an executive branch of government. Yet O'Neill grants Dr. Wood a generous measure of skill and vision, by which he could hold spellbinding and revealing discussions with faculty members and associates, untainted by philosophical antagonisms (e.g., p. 182). No figure in the entire story is more mysterious, or portrayed in a more poignant, shadow-casting role, than John Wolfe, whom the AEC selected in 1958 to form and lead its Bioenvironmental (Studies) Committee (p. 150). How, for example, could this one person—an insightful ecologist in his day—grant blanket freedom for all scientists contracted through the University of Alaska to publish their findings without constraint or review by the Bioenvironmental Committee (p. 343), then later withhold their entire second field season's environmental research results while publishing his Committee's opinions in early 1961 (p. 188)? Was he seduced into this contradictory behaviour by passionate devotion to historic consciousness, hence by a prophetic vision of the co-dependencies of megaprojects and environmental studies in the future? We may never know, but O'Neill the writer illuminates the question brilliantly for others to ponder. At the end of the first speed-reading of *The Firecracker Boys* in late 1994, I had to wonder why Hollywood had not already moved to capitalize on the box-office appeal of O'Neill's Chariot story. Oh, well—perhaps Hollywood's inattention merely illustrates Carl Benson's maxim that "Ignorance of the Arctic is an infinite resource."

The second and more leisurely reading was profoundly rewarding. Abandoning entertainment, I sought to understand Chariot's legacies and the context for archetypal patterns of thought that events of the late 1950s and early 1960s had generated, and which continue to influence us today. Readers who approach *The Firecracker Boys* in this manner will be impressed by the author's diligent scholarship. Take, for example, the theme of exercising academic freedom in connection with scientific probity. O'Neill deftly recounts the steps by which Les Viereck came to perceive collusion between the AEC's John Wolfe and the University of Alaska. Viereck arrived at his crucial decision by the end of 1960: much as he yearned to teach there, his ethics and the protection of his own credibility as a scientist simply barred him from continuing contract research for the AEC through the University of Alaska. Brina Kessel's attempts to intercede in Viereck's behalf with President Wood were rebuffed, and a monumental clash of loyalties took shape. This clash played itself out upon the futures of Don Foote and Bill Pruitt, both of whom remained on contract for some months after Viereck's resignation. Released from contractual obligations, Les still contributed by helping other scientists plan upcoming 1961 field work, and finishing reports from 1960. Viereck's "being grand about the whole situation" (p. 187) first baffled, then increasingly nettled those at the University who placed highest value on the corporate loyalties they considered implicit in contract research (p. 179). Soon enough the Wood view prevailed: twin loves for truth and for the Arctic that Viereck, Foote, and Pruitt all shared—while admirable—were inconvenient luxuries that a young university growing into President Wood's mould of thinking could not afford to retain as faculty strengths. The pessimist in me saw the corporatist paradigm for universities gaining an early stranglehold in Alaska; the optimist in me rejoiced at the vindicating honours and accolades bestowed on Viereck and Pruitt almost exactly one-third of a century after Les Viereck composed his letter of resignation from Chariot research.

Other historical themes thread their way through Dan O'Neill's account. Project Chariot was the seedbed for formation of the Alaska Federation of Natives, and the extinguishment of Native land claims by federal legislation (Alaska Native Claims Settlement Act) in 1971. The *ad hoc* Chariot model for environmental studies being conducted in advance of major federally supported projects was institutionalized—for better or worse—by the U.S. National Environmental Policy Act (NEPA) of 1970. When the first real exercise of the NEPA's intent proved to be the public debate over construction of the Trans-Alaska Pipeline in 1971, the AEC's published volume of Project Chariot environmental studies (Wilimovsky and Wolfe, 1966) became the *de facto* prototype for subsequent "Environmental Impact Statements" in the United States and, to some extent, in Canada. And yes, even stirrings of gender equity can be found in the roles and rights of women in various episodes of this Chariot chronicle.

Universities are not the only traditional institutions held up to scrutiny by O'Neill's chronicle for their conduct during the Project Chariot years. The first few State of Alaska Legislatures, the press, sectarian and ecumenical church groups, and even chambers of commerce were unprepared to deal with the implications of Project Chariot, and uncertain what role, if any, community doubt should play in Cold War Alaska. Within each of these communities of representative civic thought and action, conduct ranged from acquiescence and support for the AEC's risk-taking, to doubt and dissent, at different times and in different settings. This review barely hints at the story's depth, for two or more themes intertwine at times. An early prototype emerges, for example, for a network of doubters that allied the concerns of scientists and Alaska Natives, and used the information highway of church pulpits to spread concerns nationally (p. 222). The ambitious scope of this book can perhaps be conveyed by pointing out that any one of these themes could stand alone as the subject of research for a doctoral dissertation. My admiration for Dan O'Neill's scholarship and writing soared with the second reading. I reflected on Dan's opening statement, "This did not start out to be a book," (p. 295) to a section that explains how his research originally was to have been preserved primarily as a documentary film. Lucky for us, but his shift of medium from film to book has left unfilled the "niches" of both documentary and dramatic film treatment of important material. Perhaps Hollywood's failure to pick the Chariot story for dramatization has spared arctic scholarship having to sidestep messy trivializations.

Early in 1995, students from Point Hope approached me with a request that I teach a seminar course in Barrow for people interested in the legacies and confusions connected with Project Chariot. By the time Dan's book had appeared a few months earlier, "Project Chariot" had come to connote renewed public fear and loathing on Alaska's North Slope. Fear was centered on cancer risks, and loathing was directed dually at "evil science" and at the U.S. federal government. Dominating the understanding or misunderstanding of Project Chariot was its perception primarily as some radioactive tracer material that had been buried at Ogotoruk Creek in August 1962 (p. 278, 367). Ironically, it was Dan himself who had triggered the alarm over this tracer material in 1992, after discovering its existence upon reading 30-year-old correspondence and AEC project files in Livermore, California, and elsewhere. Ironically too, the 1962 tracer experiment was an afterthought, an experiment neither designed as, nor funded by, Project Chariot or the AEC's bioenvironmental studies; indeed it was conducted after the AEC had secretly decided to abandon Project Chariot's cratering experiment altogether (p. 254, 279). Students requesting the seminar were deeply troubled, partly by the cancer scare associated with the 30 years of radioactive decay by some 26 millicuries in buried tracer substance, and partly by the ugly inferences of genocidal motivations toward the Iñupiat on the part of the AEC and its accomplices. Following a generation and a half of the story's dormancy and willful forgetfulness about the Cold War scheme, offering a dispassionate seminar anywhere within the University of Alaska system promised to be a challenging, perhaps delicate, undertaking.

After consenting to lead the seminar (and the University of Alaska Fairbanks' gratifying approval of the proposed course outline) I began my third reading of *The Firecracker Boys*, and at the same time began preparing a chronological "instructor's concordance" for Dan's book. Using computer spreadsheet software to enter and sort the book's major events and supporting documents by dates into one sequential order, I confronted the only significant flaw in the book: its endnotes are maddeningly difficult to connect to the text without page numbers or another system to position them. One of the book's 19 chapters, as I recall, has 112 supporting endnotes. This flaw is not the author's fault. Instead, it represents the publisher's failure to anticipate northern readers' and students' reading the book in the same serious way it was crafted. Nor is Dan O'Neill to be faulted for his thematic "yarn-spinning" approach, which required his chapters to overlap in time, to tell a coherent story. A strictly chronological account would have had no more coherence or appeal to thoughtful readers than a printout of my spreadsheet, or of newspaper clippings, files, and letters stacked chronologically for the years 1945 to 1993.

The first seminar to use *The Firecracker Boys* was conducted in Barrow over five weekend sessions in the spring of 1995. Experiences with "The Project Chariot Story" for college students were revealing. First, pain lingers on from the wounds inflicted by Cold War insensitivities toward community and culture. Half of the first class of North Slope students found they were not yet ready for the seminar's revisiting of the agonies that their families had endured during Chariot, or as later outgrowths of the project. For those students who did persist, however, the seminar itself became part of a still unfolding episode in the Project Chariot story. That is, patterns of healing through understanding have emerged from the seminar's dynamics. Second, students were naturally eager to invite the author himself, first by audioconference, then in person, to take part in the seminar. Dan O'Neill agreed to both invitations, and his availability as a discussant has now become a popular highlight for students enrolled in expanded offerings of this course, both in Barrow and in Fairbanks. Dan's popularity in this forum no doubt reflects the oral historian in his background.

The seminar has also hosted a number of discussants who are treated by the book as key players in the Chariot era of 1957–66 (Celia Hunter, Ginny Wood, Al Johnson, Rev. Richard Heacock). Other discussants with intimate knowledge of technical, legal, and administrative matters, or themes in the wider story, have further enriched the Chariot seminar. In the absence of seminar participation, so far, by any defenders of the AEC's conduct in the Chariot era, the responsibility for reconstructing attitudes and conduct by such Chariot supporters falls on the instructor. However awkward, playing devil's advocate is absolutely essential to balanced discussions of the full dimensions of the Project Chariot story. This is the true test of scholarship and insight in *The Firecracker Boys*. By refraining from cheap shots, and by avoiding the use of unsoftened black colours from his palette, Dan makes it possible to see the thinking of Chariot's apologists in context. Thus, he leaves the door open for thoughtful dialogue. Someday, I'd like to believe, one-time apologists, heroes, and victims will come together through that open door, and celebrate completing the healing process. And I imagine their concurrence taking shape against the background of still untold parallel stories from the former Soviet Union. Wounds, narrow escape, and all, the process worked, whereby dissent in a free society enabled that society to avoid committing nuclear folly in the Arctic.

Tested and examined, discussed from many angles, laughed about, sometimes agonizing, at other times triumphant, Dan O'Neill's scholarship in probing, then crafting *The Firecracker Boys* story has proven monumentally durable. This volume's versatility—thriller, thematic discourse, and catalyst for healing—commends it to everyone's attention.

REFERENCES

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