NONFICTION

To Understand Climate Change, We Need to Understand Greenland

By Doug Bock Clark

July 3, 2019

THE ICE AT THE END OF THE WORLD
An Epic Journey Into Greenland's Buried Past and Our Perilous Future
By Jon Gertner

More than a million years ago, snow fell on Greenland in the summer. Temperatures were low enough that it stuck, and the ice pack accumulated over the millenniums, eventually stacking higher than 10,000 feet and covering over 700,000 square miles. This frozen desert supported no life. Temperatures regularly ran dozens of degrees below zero, especially during the many months the sun declined to appear. As one 18th-century visitor recorded, the ice sheet was a frigid, deadly place that had "no use to mankind."

Of course, if there's a place so miserable that most humans avoid it, there will be a hardy minority spurred by the challenge. These courageous, often exhibitionist explorers, questing after knowledge as much as fame, are the subject of Jon Gertner's fascinating and encyclopedic book, "The Ice at the End of the World." Rather than limit himself to a handful of picturesque

expeditions, he follows a century-long parade of adventurers and scientists onto the ice, delineating how each laid the groundwork for the next. “To an unusual degree, problems in the Arctic are worked on not just at a particular moment in time, but over generations,” he writes in this engrossing history of a once useless place now transformed into one essential to confronting the existential threat of global warming.

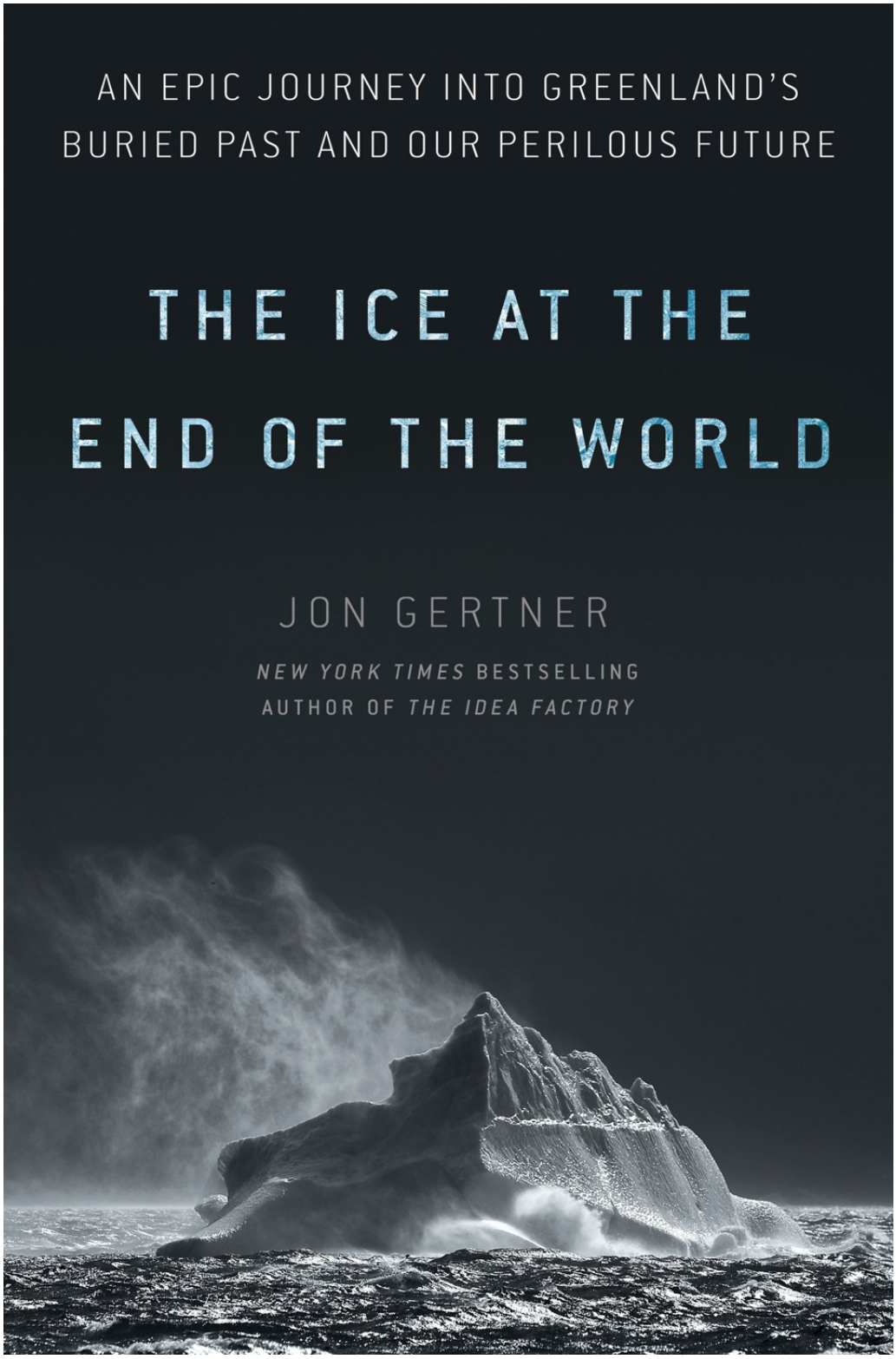
BOOK REVIEW The New York Times

Gertner’s story begins in 1882, when the seal-hunting Norwegian zoologist Fridtjof Nansen glimpsed Greenland from a ship and was “drawn irresistibly to the charms and mysteries of this unknown world.” The ship’s captain denied him permission to hopscotch 25 miles on a series of ice floes to reach shore, but Nansen was the sort whom friends had learned not to warn that a ski jump was impossible, lest he be compelled to prove them wrong. Years later he organized an expedition with the motto “Death or the west coast of Greenland,” and struck out from the east coast on skis with five men, each dragging a sled with 200 pounds of gear.

Jon Gertner's history of Greenland is ultimately a story about obsession — including his own.
Alexander Leigh Mackay

Gertner vivifies the horrors of this 350-mile "death march" beyond the quotidian frostbite and near starvation. With prose so lucid it's easy to overlook its elegance, he conjures how the men's breath condensed into icy crowns inside their reindeer fur sleeping bags and how their lack of fuel forced them to stick snow-stuffed flasks down their shirts so their body heat would melt the crystals into drinking water — a process so slow that though "surrounded by trillions of tons of frozen water, they awoke thirsty, worked thirsty, slept thirsty." Remarkably, after two hellish months, they stepped off the ice and into the history books as the first people to traverse Greenland.

Ostensibly, Nansen and his men suffered for the scientific goal of disproving the nonsensical theory that the glacial island's center was an oasis full of pine trees and reindeer. They may have, however, been more enticed by anticipation of the tens of thousands of admirers who met their return ship. Certainly, for those questing immediately after Nansen, science was often a pretext for glory, and selfish pursuits attracted ignoble men. The American Robert Peary managed to prove that Greenland was an island by dogsledding to unvisited sections of its coast. After shamelessly exploiting the Polar Inuit on whom he relied, he reaped huge financial rewards on the lecture circuit on his return home. As Gertner notes, Peary "was the kind of man who would reach into a barrel of biscuits, throw a handful into the air, and then laugh as his Inuit friends scurried to pick them up from the floor and eat them," and he fathered at least two sons with an Inuit girl in her early teens. But as the map of Greenland filled in, and there were fewer exploratory laurels to be won, the "men of ego" gave way to the "men of research," for what besides science could compel people back into that polar wasteland?



Early in the 20th century, the German meteorologist Alfred Wegener was one of the first people to guess that Greenland's massive ice sheet acted as a sort of air-conditioner for the world and that understanding it was crucial to comprehending earth's climate. During his data-gathering he endured

hardships equal to Nansen and Peary — at one point, frostbite wounded his face with leprotic “ulcerous yellow spots” — before he eventually died on the ice. But his findings prompted the world to better understand the ice sheet’s importance. And as technology improved, hardscrabble expeditions powered by Icelandic ponies were replaced by government-sponsored battalions of scientists harnessing snow tractors and ski-lift-like systems to move their gear, and even employing a miniature nuclear reactor to keep warm. It is in finessing this transition that Gertner manages a magic trick, transforming his hybrid book from one of physical to intellectual adventure.

For though the Arctic journeys become boring tractor rides and the scientists are, alas, less memorable than the roguish adventurers, the drama of discovery skates the narrative forward. For as researchers better understand the ice sheet, they also realize it may be the best way to understand why temperatures are rising across the world.

Gertner, a veteran science writer for prestigious magazines and the author of a best-selling book tracing how technologies developed at Bell Labs, is in his element describing how each intellectual eureka moment led to the next. We meet Henri Bader, a Swiss glaciologist working for the Americans during the Cold War, as he and his team drill thousands of feet into the icecap, extracting tiny frozen bubbles, the gases of which help them to reconstruct the history of the climate going back more than 100,000 years. With that revelation established, Gertner is off to the races chronicling the efforts to grapple with the next logical question — *How fast is the world warming?* When he arrives at the present, he joins modern-day Wegeners on airplane flights that use lasers to measure the stupendous amount of meltwater pouring off Greenland each summer as they attempt to understand how all these changes will transform the world.

It is here that the book completes its last metamorphosis, from a scientific history into a submission to the ever-growing canon of climate change literature. “Big Climate Change Book” is an identity that Gertner and his publisher work mightily to claim, and yet the book felt to me too idiosyncratic, too multifaceted, to be neatly pegged there. Gertner provides us with the obligatory descriptions of the catastrophic upheavals that may ensue when Greenland’s three quadrillion tons of ice liquefy and rising seas send half a billion refugees fleeing their drowned homes. But unlike other recent books that have captured the public’s attention with excruciating play-by-plays of how the environmental apocalypse will go down or poetic laments for the ailing natural world, Gertner invests his writerly energies less in describing *what* is happening to Greenland’s ice than to *how* we know it. It is the baton race of science, with knowledge passed from one Arctic investigator to the next, that seems to captivate him most.

This is an intriguing way to frame a book about global warming, but it also raises the question: What makes this one unique? By the end of the book, his approach appealed to me for several reasons, most notably because it impressed on me like nothing I’ve read before how hard-earned climate change facts are, with statements as taken-for-granted as *The earth is warming* having been gleaned only at the cost of lives and decades of cumulative toil. And yet I couldn’t shake the feeling that Gertner never really saw his project as primarily about climate change.

Gertner spends a lot of pages in the introduction offering multiple and sprawling rationales for the existence of this book, but it seemed to me that ultimately he was seized by the same irresistible “charms and mysteries of this unknown world” that had possessed his forebears. This is a book about obsession. Nansen’s and Peary’s and Wegener’s and Bader’s and — ultimately — Gertner’s obsession. I mean that as a compliment, for despite the book’s composure, it is this wild and viral obsession that is the most compelling thing

about it. And when, in the final paragraph, Gertner stands on the shore of Greenland, watching icebergs that have calved off glaciers floating past, I couldn't help thinking that he had won a place for himself in the lineage of explorers he had been chronicling.

Doug Bock Clark's first book, "The Last Whalers: Three Years in the Far Pacific With an Ancient Tribe and a Vanishing Way of Life," was published earlier this year.

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An Epic Journey Into Greenland's Buried Past and Our Perilous Future
By Jon Gertner
Illustrated. 418 pp. Random House. $28.