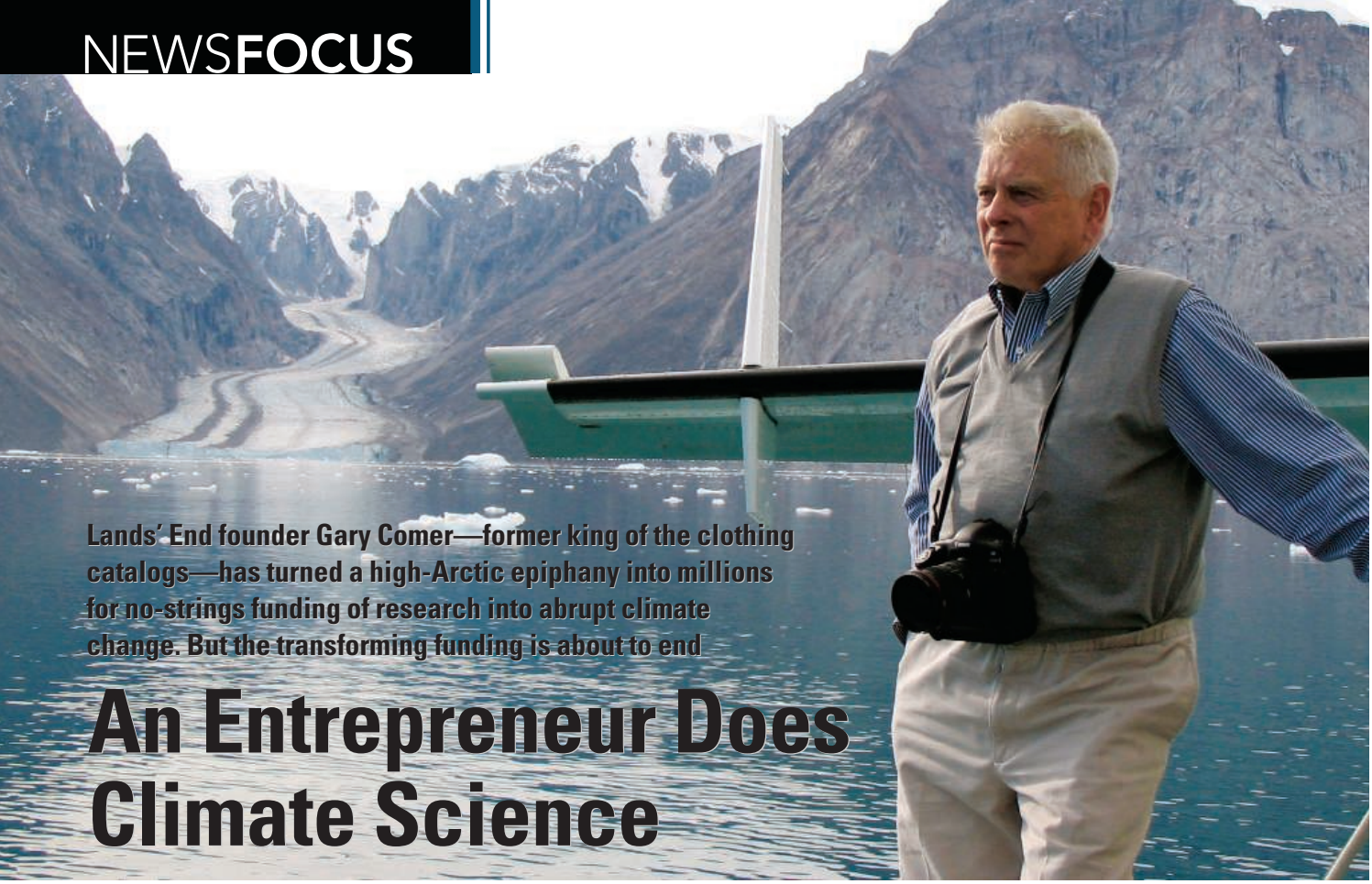

Lands' End founder Gary Comer—former king of the clothing catalogs—has turned a high-Arctic epiphany into millions for no-strings funding of research into abrupt climate change. But the transforming funding is about to end

An Entrepreneur Does Climate Science

GARY COMER KNEW SOMETHING WASN'T right. John Franklin and 128 companions had famously tackled the Northwest Passage in 1845, and none of them returned. Roald Amundsen finally conquered the passage in 1906; it took him 3 years. Yet in the summer of 2001, Comer was motoring unscathed through open Arctic waters that should have been ice-clogged. He made the transit over the top of North America in just 19 days. "We were able to do it, and so many people had failed," he says. "Something had happened."

It was global warming, Comer decided. Months later, he began to work on the problem of sudden changes in his beloved Arctic. "I had some cash," he recalls, having the day before cleared about $1 billion selling his Lands' End catalog business. And his sense of urgency had been sharpened by a recent diagnosis of prostate cancer. So he told a Nobel-laureate geochemist, "I'd like to do something that would be helpful" about global warming.

Thus began Comer's freewheeling research enterprise targeting climate's propensity for sudden, potentially debilitating shifts. He hoped to awaken the American public to the threat of global warming. His approach was unconventional but not so surprising coming from a world-class sailor, empire builder, and former ad man: Identify a few top-notch senior scientists; give them money, unsolicited, to support up-and-coming young scientists; fund fieldwork nobody else would touch; and then—less predictably—jump in and enjoy the science.

Tens of millions of dollars later, Comer has made an impression. "He changed the field" of abrupt climate change, says glacial geologist George Denton of the University of Maine, Orono. And "he changed my life. He's something very special. This guy is thinking about the world; he thinks something has to be done." Comer hopes that money well spent on a key climate unknown will prompt the federal government to take up the burden. "Who needs to go to the moon?" he asks. "Take care of Earth."

From dinghy to deep sea

Comer's entrepreneurial career as well as his foray into science funding really began on Lake Michigan. Born to a working-class family and raised on the South Side of Chicago, he began sailing small boats off Chicago at age 14. By age 30, Comer had sailed his 7-meter Star Class *Turmoil* to second place in the world championships. At the same time, he was having second thoughts about his 10-year advertising career as a copywriter at Young & Rubicam, a job he had approached through sailing friends. So he started a sailing-gear supply company, Lands' End Yacht Stores (misplacing the apostrophe by typo), which morphed into the huge catalog and Web apparel business of Lands' End Inc.

The *Turmoil* boats grew as well, and lost their sails, until Comer was motoring to remote coasts in a 46-meter *Turmoil* that "from the outside looks like a fishing vessel," as one guest puts it, "and from the inside like The Four Seasons." On it, he traveled more than a quarter-million kilometers, much of it to high latitudes. "My lifelong fascination with the Arctic and things Arctic started [when] I became obsessed with news of the plane crash that took the lives of pilot Wiley Post and humorist Will Rogers" near Barrow, Alaska, he wrote in a journal. "I was 10. … It was the beginning of my fascination with airplanes, pilots, Eskimos, igloos, and life in the bitter cold. … The sheer strangeness of it all—I was amazed."

Far traveler. Comer's *Turmoil* has carried scientists to Greenland's glacier-grooved coast to unravel climate history.

CREDITS (TOP TO BOTTOM): RICHARD ALLEY; G. COMER

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Climate moneyman. Gary Comer funds and transports scientists who study abrupt climate change in the Arctic.

Charles Hollister, a deep-sea sedimentologist, was the first to begin turning Comer's adventurous spirit toward science. By the late 1990s, Hollister, a longtime Woods Hole Oceanographic Institution (WHOI) researcher, had become an administrator and fundraiser there. What better person to interest in oceanography than this well-heeled adventurer of the sea? Hollister contacted Comer and got an invitation to cruise the Kurile Islands northeast of Japan with Comer on *Turmoil*. Hollister died in 1999 in a fall while hiking, but the new WHOI director of development, Daniel Stuermer, soon invited Comer on a different sort of ocean expedition: heading down in the deep submersible *Alvin* to the subsea mountain range of the East Pacific Rise.

The tipping point

"Gary got excited," says Stuermer. But Comer had not yet made up his mind to spend major amounts of money on anybody's science. That came after his "over-the-top cruise." On returning from the Northwest Passage, he called Stuermer. "I'm really worried," Stuermer recalls him saying. "I shouldn't have been able to do that. Global warming is really a problem for the world. What are we going to do about it?" That began Comer's career in funding climate change research.

"There wasn't any plan," Comer concedes. Instead, he picked up "little threads" that presented themselves. There was, however, a new motivation. In December 2001, he learned he had advanced prostate cancer. That "made me realize whatever I was going to do, it was time to do it," he says. And "it's important to let other people know there are things you can do with money that are very satisfying and helpful."

One thread came in conversation with a Chicago friend in early 2002. When global warming came up, the friend mentioned a scientist—the friend's ex-wife's cousin's husband—who would share Comer's interests. So Comer went to visit the laboratory of F. Sherwood Rowland, an atmospheric chemist at the University of California, Irvine, who had won the 1995 Nobel Prize for his role in pinning ozone losses on chlorofluorocarbons and was now studying methane, a powerful greenhouse gas.

That summer, Comer sent his jet to pick up Rowland and his wife near Irvine. They were to meet him on *Turmoil* in Victoria, British Columbia. Comer arrived late but exuberant. He had just sold Lands' End to Sears for $1.9 billion, clearing about $1 billion cash on the deal. So he popped the question: "If I wanted to put $1 million into climate change," Rowland recalls him saying, "what should I do?"

Rowland had a ready answer that set the core structure of Comer's funding program: Comer should support 10 graduate and postdoctoral fellowships at $50,000 per year for 2 years. Rowland offered to take one fellow and choose researchers to handle the rest. Comer liked the idea, but he thought it called for "not enough money, too many people." Instead, he proposed five fellowships at $100,000 per year to run for 3 years—overhead-free, he would insist.

On to abruptness

Comer wasn't finished. He had "started out wanting to bring the climate-change problem to public attention," he says. He intended to be in the thick of climate research. And for that, it seemed, he needed geochemist Wallace Broecker. Comer kept coming across Broecker's name, whether from Stuermer, an environmentally connected friend, or his own reading. A longtime researcher at Lamont-Doherty Earth Observatory in Palisades, New York, Broecker was obviously the point man on nasty surprises that might be lurking in the looming greenhouse (*Science*, 10 July 1998, p. 156). Comer wrote Broecker a letter about his disturbing trip through the Northwest Passage, but Broecker was too busy teaching near the end of the semester to go see Comer at his homes in Waukesha, Wisconsin, or Chicago. So Comer came to Broecker.

Within a few minutes of meeting Broecker in his hotel's coffee shop, Comer popped his question again: "Wally, I want to help you," Broecker recalls him saying. "What can I do for you?" Rowland's fellowship idea sounded good to Broecker, especially with a focus on abrupt climate change. This was the climate system's big unknown, Broecker argued. Sudden shifts in climate had rattled the hemisphere if not the globe not so long ago, and the growing greenhouse could conceivably trigger a recurrence. Broecker was worried in particular about the heat-carrying ocean conveyor that warms the far northern Atlantic. If the greenhouse shut it down, as something did repeatedly more than 10,000 years ago, there could be hell to pay.

"I became pretty tight with Wally," Comer says. "I've always had an interest in science, though it was nothing I studied in school. Wally was a great inspiration; he has a knack for explaining things. He came up with really interesting things to do. His interests became my interests." Broecker returns the compliments. "He's really made a difference to me," he says. "It's been much, much more than the money. He caught me at a time when I was thinking of retiring. He inspired me and gave me a mission."

The Comer way

Once he made his initial contacts with the scientific community, Comer grew his funding much as he grew his business. He rooted out good people and let them loose, while keeping a close eye on how they did. "He's very straightforward, very direct," says Stuermer. "If you're satisfying him, you know. If not, you know that." Stuermer's marching orders were simple: "Do things that are important but won't be done by government," he recalls. "Choose people Comer would like—that is, respect and admire." And finally, Comer said, "Dan, I'm letting you guide me here; don't [mess] up."

No one has messed up so far. Comer initially gave $1 million to WHOI's Climate Institute, followed by an unrestricted $5 million gift to WHOI, some of which went to climate-related research. He expanded his centerpiece, the Comer Fellows, to 31 "mentors" running two fellows each over 5 years. The fellows program will end 2 years from now, if all the pending renewals go through as expected, for a total of about $6 million. Most of the mentors were chosen by Rowland and Broecker and some

Retreat. Glaciers have withdrawn (light-brown areas) since Greenland's last cold snap 13,000 years ago.

CREDIT: G. COMER

more after Broecker brought in glaciologist Richard Alley of Pennsylvania State University in State College to form a troika of overseers. "It's quick funds," says Comer. "We don't have a peer-review system." His motto: "Keep it simple." In addition, Comer has set aside $5 million to be distributed with advice from the troika. Unsolicited proposals are not considered.

Comer has also picked up the annual tab of about $50,000 to support the "Changelings," a small group of abrupt-climate-change specialists who periodically gather with invited experts to ponder special problems. After starting the Changelings in the mid-1990s, the National Oceanic and Atmospheric Administration (NOAA) dropped the funding in a cost-cutting move. And Comer is covering $18 million of the $40 million needed to replace Lamont's 50-year-old "Quonset hut" of a geochemistry building, where Broecker has spent all 53 years of his career. The move is reminiscent of Comer's 2001 $21 million contribution to help build a children's hospital for the University of Chicago. Indeed, his climate contributions are in much the same spirit as the several million he has contributed over a few years to stabilize schools and the community in his childhood inner-city neighborhood of Chicago.

Field workers. Left to right, glacial geologist Denton, glaciologist Alley, environmental organizer Phillip Conkling, funder Comer, and geochemist Broecker tackled the icy wastes of Greenland.

CREDIT: PROVIDED BY P. CONKLING

Big fish, smallish pond

Millions may be small potatoes in biomedicine, but in a subspecialty of climate change, it's real money. The pace of Comer's spending on research over 6 years will equal or exceed that of NOAA funding specified for abrupt climate change. And that's about the only U.S. public funding directed toward that area. Comer's contribution is "a very large and beneficial infusion," says Alley. "There's an immense amount of really good science. The total output of the field is much greater than it would have been otherwise."

Six million dollars' worth of cheap, productive postgraduate labor is in fact buying a good deal of science. For example, one of the first people Rowland contacted was geochemist Jeffrey Severinghaus of the Scripps Institution of Oceanography in San Diego, California. The call came out of the blue: "This is not a contest. You've already won." He'd won two fellows, no strings attached. "Gary clearly has an interest in abrupt climate change," says Severinghaus, "but there's been no heavy-handed direction."

One of Severinghaus's fellows showed that carbon dioxide was not the ultimate driver of the last deglaciation; that work was published in *Science* in 2003. A second fellow refined Severinghaus's geochemical "thermometer," which used air trapped in ice cores to document Greenland's stunningly abrupt 10°C temperature drops during the last ice age.

"It's a very effective way of funding science," says climate modeler Stefan Rahmstorf of the Potsdam Institute for Climate Impact Research in Germany, another mentor. At first, his offer from Rowland "read like a Nigerian e-mail scam," he says. He found it "wonderful to be able to think freely, … follow scientific instincts, and explore things" without all the usual bureaucracy.

Comer has also taken researchers on four field trips to high latitudes. Two expeditions were to survey areas of Canada, in part using Comer's 12-seat jet, eight-seat Caravan prop plane, and a chartered helicopter. There researchers—including Comer, Broecker, and Denton—found signs that the trigger for an abrupt cooling 13,000 years ago called the Younger Dryas may not have been a gush of glacial meltwater, as many had thought, because the meltwater was still blocked by ice then.

Two other field trips took *Turmoil* to southern Greenland and into Scoresby Sund on the east-central coast to unravel the glacial history of the Younger Dryas. Working off of *Turmoil* and reconnoitering in Comer's float plane or helicopter, Denton, Alley, and others studied the ridges of debris deposited by glaciers at their maximum extent, when summers were coldest. Drawing on that fieldwork, Denton, Alley, Comer, and Broecker reported last year that a broad expanse of North Atlantic ice cover seems to have been key to a brutally cold Younger Dryas. That implies that in a future greenhouse world—when sea ice is diminished, not expanded—a repeat cooling like the Younger Dryas would be less likely.

As evidenced by his prominent authorship on the resulting papers, it was these field trips that drew Comer deeply into the science. The authorships were "not an honorary thing," says Alley. "He was in the discussions, he was contributing." That's the way he's always been, says his daughter Stephanie Comer. "He's someone who barely made it out of high school and never went to college," she says. "But he figured out how to educate himself. He'd find the best people out there who knew about, say, inventory control, and he'd learn through them. He approaches everything that way." Her father's initial hope of bringing in the general public proved unrealistic, he says. Instead, "I became interested in the science side, understanding it myself."

Good but not forever

Whatever the motivation, the Comer approach has been well received in the broader community. "They're good people doing good science, no doubt about that," says paleoclimatologist Thomas Crowley of Duke University in Durham, North Carolina, who has received no Comer support. El Niño modeler Mark Cane of Lamont, who only recently got "a little money" from Comer, says, "A lot of good work has come out of it. Climate research in general is not very well funded these days, so he's keeping areas alive that would be in serious trouble." That's okay with non-Comer recipients such as Crowley; it's Comer's money, not the public's, and he seems to know what to do with it.

Well received or not, Comer's program is not open-ended. When fellowship extensions end in 2 years, "I'm out of funds for it," says Comer. "We're trying to get things started, things that wouldn't be supported otherwise. [After that], Uncle Sam is going to have to take over. The fellowships enabled a group of 60 or 70 people to find jobs in climate research, particularly abrupt climate change. That was the purpose."

Comer does have one other iron in the climate fire. Backing up the science he's funded, he is sinking millions a year into a small Arizona company developing a method for extracting the main greenhouse gas—carbon dioxide—right out of the air for permanent storage underground. If some new science can't win the day, perhaps some innovative engineering can.

–RICHARD A. KERR