

HISTORY OF SCIENCE

The Worst Science in the World

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There's a very dark humor that permeates the culture of field science. Tales of hardship, suffering, and endurance are often told with a peculiar form of irony, filled with braggadocio, and sprinkled with in-house jokes. Nowhere is this strange mixture of hardship, suffering, and dark humor more evident than in Apsley Cherry-Garrard's celebrated memoir of Antarctic exploration dramatically titled *The Worst Journey in the World* (1). Its memorable opening line sets its tone: "Polar exploration is at once the cleanest and most isolated way of having a bad time which has been devised." Billed as the *War and Peace* of travel writing, the nearly 600-page epic recounts a disastrous 1911 journey to locate and collect the eggs of the emperor penguin from the rookery on Cape Crozier in the Antarctic. Then thought to be primitive because they were flightless, penguins had drawn the attention



Heading off for some eggs. Birdie Bowers, Edward Wilson, and Apsley Cherry-Garrard (left to right) before departing on their winter journey.

of the many post-Darwinian evolutionists at the turn of the 20th century who believed that anatomical study of their embryos might shed light on the evolutionary relationship of birds and reptiles. Unfortunately for the evolutionists, the birds nest in the Antarctic winter, when travel is most difficult. And so, despite the fact that it was the worst time of year to undertake the 110-km journey from Robert Scott's base camp to the rookery, 100 years ago this month Cherry-Garrard found himself on what became immortalized in the

wording of his book's title. Subjected to total darkness, freezing cold (the temperatures Cherry-Garrard, Edward Wilson, and Birdie Bowers experienced on their five-week winter journey averaged -40°C or below), and some of the worst blizzard conditions recorded in the history of polar exploration, Cherry-Garrard began to question the wisdom of it all. His doubts later grew when the results of the study of the three intact eggs, the entire scientific booty his party managed to bring back, proved inconclusive. (The "scientific report" he offers is actually the most humorous part of his account.) Ruefully, he asked whether the pursuit of scientific knowledge was really worthwhile if it involved such "super-human endurance" or if one took such "appalling risks."

The question remained famously unanswered by Cherry-Garrard. That is perhaps why the irony and the dark humor seem so stark, set against the horrific experience he took such pains to describe. The question recurs—at least implicitly in my mind—on reading Edward Larson's *An Empire of Ice: Scott, Shackleton, and the Heroic Age of Antarctic Science*. Larson (a historian at Pepperdine University) offers yet another compelling account of suffering, heroism, and even martyrdom in retelling the story of Antarctic exploration during the early years of the 20th century (of which, it should be said, the journey to find the penguin rookery is but part). His book appears in time for the 100th anniversary of the celebrated race to the South Pole between the successful Norwegian Roald Amundsen (who triumphantly got there first and came back) and the ill-fated Englishman Robert Falcon Scott (who arrived a month later and with his companions tragically froze to death en route back to the Ross Sea). It also coincides with the 150th anniversary of the birth of the famed Norwegian explorer Fridtjof Nansen, often praised by aficionados as the greatest of all polar explorer-travelers.

On the surface, Larson's book offers a well-written, broad sweep of a mostly familiar story appropriate to the commemorative tone of the centenary. From previous histories of polar exploration, we all know, for example,

who lives, who dies, and who suffers the most. What takes the book beyond the standard narrative is Larson's presentation of the British expeditions against the backdrop of the imperial geopolitics of the age,

which made science an integral part of Antarctic exploration. Drawing on new sources, and at other times simply rereading familiar ones more closely, he retells the story of Antarctic exploration from the vantage point of science. Larson pays careful attention to

scientific research that has often been downplayed and at times been completely left out of historical understanding. What emerges is a far more interesting and richer account than we have had thus far. Through his considerations of work on magnetism, geology, paleobotany, paleontology, zoology (of course), and even ice itself, Larson argues that Antarctic exploration was not just filled with but in fact driven by science. This was especially true in the case of Scott and his *Terra Nova* expedition, whose primary motives Larson claims were not to get to the South Pole first but to instead garner scientific knowledge.

In what emerges as Larson's recharacterization, Scott's "adversary" Amundsen was hardly a worthy rival because the Norwegian's motives did not include science—he only wanted to be the first to reach the South Pole. Polar biographers and writers such as the influential Roland Huntford—whose *Last Place on Earth* (2) was the basis for a popular television series—have portrayed Amundsen as a brilliant strategist and planner. In Larson's telling, he comes off as an arriviste, someone more keen on status and prominence than on making a lasting contribution to the world of science. And Scott, who has frequently been portrayed (again especially in Huntford's work) as a complacent if not sluggish bungler, comes across as the more authentic and honorable figure, someone more concerned with gathering knowledge than gaining fame. Larson's new interpretation, therefore, leads to a very different and more nuanced understanding of the story's protagonists, if not a radical reinterpretation of the Scott-Amundsen race. In redrawing the issues, reinterpreting motives, and recharacterizing the protagonists in such a well-known story, the book is not unlike Larson's earlier *Summer for the Gods* (3). That Pulitzer Prize-winning history gave us a newly complex portrait of the protagonists, their motives, and the socio-political backdrop to what became known as the Scopes "Monkey Trial."

An Empire of Ice
Scott, Shackleton, and
the Heroic Age of
Antarctic Science

by Edward J. Larson

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In short, Larson has written a fascinating book, one sure to force a rethinking of the Scott-Amundsen race as well as reconsiderations that will include science as a driving force in Antarctic and indeed polar exploration. *An Empire of Ice* nonetheless still leaves open in my mind Cherry-Garrard's unanswerable question while drawing attention to the misery, suffering, and even death that have accompanied polar science. I'm not sure that there is much that is funny in that.

References and Notes

1. A. Cherry-Garrard, *The Worst Journey in the World: Antarctic, 1910–1913* (Constable, London, 1922).
2. Originally published as R. Huntford, *Scott and Amundsen* (Hodder and Stoughton, London, 1979).
3. E. J. Larson, *Summer for the Gods: The Scopes Trial and America's Continuing Debate over Science and Religion* (Basic Books, New York, 1997).
4. R. F. Scott, *Scott's Last Expedition...* (Dodd, Mead, New York, 1913).

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THEATER: SPACE EXPLORATION

The Soviet's Chief Designer

On 12 April 1961, cosmonaut Yuri Gagarin became the first human to orbit our planet. His eyes were the first to look down at Earth from the darkness of space; his body the first to break free of our planet's gravitational field. This Soviet achievement was as much a product of the Cold War as of a dream to explore outer space, and it filled people with both wonder and fear.

As a child, playwright Rona Munro shared the world's excitement and romance with space exploration (*1*). In *Little Eagles*, performed by the Royal Shakespeare Company at London's Hampstead Theatre from mid-April into early May, she tells the relatively unknown story of one man behind the dream of space flight, Sergei Pavlovich Korolyov (*2*). Right up until his death in 1966, Korolyov was known only as the "Chief Designer"—his name and role withheld by the Soviet Union as a secret of state. He had been responsible not only for Gagarin's flight but also for Sputnik, Earth's first

artificial satellite, and many other pioneering successes of the Soviet space program, including orbiting the first animal (the dog Laika) and the first spacewalk (Alexei Leonov's 20-minute excursion from Voskhod 2). Set against the backdrop of the space race and recent political and military history, Korolyov's story is as fascinating as it is complex. Munro chose to depict it through a sequence of scenes that provide only glimpses of his life.

The playwright sets the opening scene in 1938, in the Kolyma Gulag in Siberia. The conditions are bleak. Stalin speaks to the prisoners: "Comrades. Our country is attacked from within. Only the most naïve among you can doubt that our enemies are right in the heart of our great nation, like rats in a barrel of wheat." Korolyov is one of those "enemies," robbed of his health but not of his will to live or of his dreams of rockets and space. As a young rocket engineer, he fell victim to one of Stalin's purges and was sentenced to ten years of hard labor. Luckily, his skills were recognized as being too precious to be wasted. Amid the war effort, he was soon reassigned to a rocket-building team in Moscow.

The trip out of the Kolyma Gulag was far from easy. Korolyov, who was still a prisoner, had to get to Moscow on his own. At the end of the play, we learn that he had hitched a ride to the nearest port, only to see that the last boat had already sailed, leaving him to face the Siberian winter, without food or a place to sleep. The secret to surviving, we hear, was to keep walking, to never stop. That is also true of the play: it keeps moving, tirelessly and relentlessly, as if inspired by Korolyov's own drive.

In the space of about three hours, the cast takes the audience from the Kolyma Gulag to Sputnik's design room, from the launch pad at Baikonur to the Red Square, and from the Cuban missile crisis to Korolyov's untimely death. Along the way, we meet an array of historical characters (including Gagarin and Soviet leaders Nikita Khrushchev and Leonid Brezhnev) as well as Korolyov's wife, daughter, and fictional doctor.

Inevitably, a lot of detail has been left out, and at times I was left wondering about the broader context of some of the scenes



Designer and his craft. Korolyov (Darrell D'Silva), holding model satellite, and Ivanovsky (James Howard).

and what happened in between them. But the play does succeed in portraying Korolyov's conflicts among his own needs (family- and healthwise), the military and political demands of his country, and his desire to fulfill his dream to pave a road to the cosmos. If, like me, you didn't live through this period of history, you will want to find out more after the show. Fortunately, though, there is no shortage of good references [e.g. (*3*, *4*)] available to fill in the details.

The production, directed by Roxana Silbert, was not particularly daring, but it was engaging and full of emotion. There were some particularly beautiful moments, such as the launch of Vostok 1: the bright orange light of lift-off followed by Gagarin aerially suspended, floating in the air, and telling us "how beautiful the world is."

Alas, that was Gagarin's only trip above Earth's atmosphere, and Korolyov's death in 1966 meant that he did not live to see American astronauts set foot on the Moon. But the dreams of both do live on. Nowadays the road to the cosmos is mostly traveled by robotic explorers and unmanned satellites. However, the images that those bring us, both of Earth and other worlds, are still a source of inspiration.

—Maria Cruz

References and Notes

1. From "Eyes on the stars—Space as inspiration," a conversation among Munro, space scientist John Zarnecki (Open University), and NASA astronaut Piers Sellers at the Royal Society, London, 30 March 2011. A webcast of the event, organized in partnership with the Royal Shakespeare Company, is archived at <http://royalsociety.org/All-our-Web-casts/>.
2. Transliterated following the playwright, although the name is more frequently rendered as Korolev.
3. D. Cadbury, *The Space Race: The Untold Story of Two Rivals and Their Struggle for the Moon* (Fourth Estate, London, 2005).
4. V. Hardesty, G. Eisman, *Epic Rivalry: The Inside Story of the Soviet and American Space Race* (National Geographic, Washington, DC, 2007); reviewed in (*5*).
5. J. Baker, *Science* **318**, 48 (2007).

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