

the rocks and events concerned. Metamorphic petrology is no easy material for popular science. By the time you explain how the phyllites, schists and gneisses started life, why they were taken to the depths of Earth's crust and how their minerals were changed under combinations of heat and pressure (each producing distinctive suites of new minerals), many readers will have lost interest. Wisely, Glassley doesn't try too hard — which is fine, because the science is almost a narrative ploy.

Natural scientists may be the only intellectuals these days who find themselves routinely exposed to the transformative experience of wilderness. Yet (as I have seen during desert fieldwork in the Middle East) on many of them it seems wasted. This may not be their fault. Expeditions, such as Glassley's, are a lesson in how travel can narrow the mind. It is hard enough to keep focused on the work when trying to cope with midges, heat, cold, disorientation, altitude and homesickness, never mind dehydration, disgusting camp food and the physical consequences. It takes a deep attunement to the wild's allure to keep appreciating the surroundings.

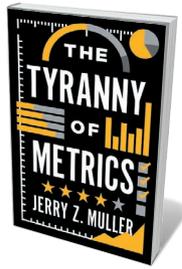
Glassley's vivid impressions of East Greenland attempt what few scientist-writers try: to explore beyond the comfort zone of his field. Followers of the medieval philosopher Duns Scotus coined the terms *haecceity* ('thisness', of specific things) and *quiddity* ('whatness', of the classifier). These are 'science'. Glassley tries also to grasp something beyond: the noumenon, an ineffable inner reality in things that cannot be discerned by the senses.

Not everyone experiences this psychological epiphany. Scientists sometimes have it trained out of them by the relentless insistence on cold measurement. Glassley, by contrast, seems obsessed with our limitations when it comes to grasping the wholeness of the world. He questions, for instance, how our 'reality' contrasts with, say, a seal's, or a fish's. Absenting himself from camp, he wanders alone with his reflections, and attempts closer communion with the hidden genius of place.

Although he repeatedly explains what he's attempting (a scientist's tendency to write abstracts for everything?), he is not always successful; yet I enjoyed and admired the attempt. What he gropes for requires art, not analysis. Perhaps that was why I kept returning to Hugh MacDiarmid's great 1934 poem, 'On a Raised Beach', which explores the limitations of science in expressing the wholeness of nature. After an opening parody of scientific language, the poet observes: "Deep conviction or preference can seldom/Find direct terms in which to express itself". ■

Ted Nield is editor of *Geoscientist* and author of *Supercontinent*. In an earlier life, he, too, sensed the noumenon in remote places at other people's expense.
e-mail: ted.nield@geolsoc.org.uk

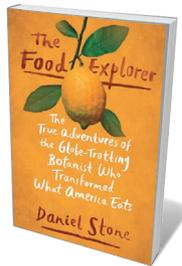
Books in brief



The Tyranny of Metrics

Jerry Z. Muller PRINCETON UNIVERSITY PRESS (2018)

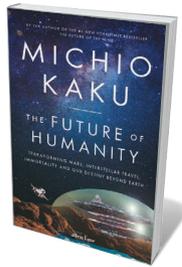
Economic historian Jerry Muller delivers a riposte to bean counters everywhere with this trenchant study of our fixation with performance metrics — a cultural ubiquity saturating education, medicine, finance and governance. As he argues, this reductive approach to monitoring efficiency almost inevitably backfires. It can lower morale by riding roughshod over professionals' experience; invite manipulation, from "gaming the stats" to "teaching to the test"; discourage innovation, promote short-termism; and reward dumb luck. Metrics, he asserts, can usefully bolster judgement, but not supplant it.



The Food Explorer

Daniel Stone DUTTON (2018)

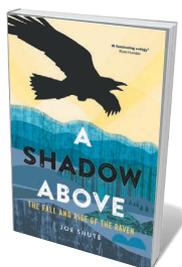
In the annals of intrepid botanists combing the globe for novel species, David Fairchild is a name to conjure with. At the turn of the twentieth century, the plant scientist introduced 200,000 'exotic' species to the United States, then something of a culinary blank slate. Kale, avocados, mangoes, pomegranates and even quinoa began to work their way into US consciousness and, eventually, markets. Daniel Stone's rip-roaring tale takes us from Fairchild's youthful meeting with naturalist Alfred Russel Wallace in Kansas to collecting trips across more than 50 countries, from Trinidad to China.



The Future of Humanity

Michio Kaku DOUBLEDAY (2018)

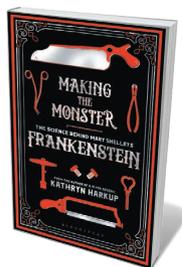
This latest foray into futurism by Michio Kaku sees the physicist unbowed by woes political and planetary. As a master of the long view, Kaku plots humanity's path to becoming a "multiplanet species". He marshals fresh advances in artificial intelligence, nanotechnology and bioengineering for his vision, segueing from lunar stations and Martian colonies to interstellar travel and human genetic engineering. There's plenty of hypothetical innovation, too: ramjet fusion machines, antimatter engines and "laser porting" of human connectomes to enable bodiless exploration of the cosmos.



A Shadow Above: The Fall and Rise of the Raven

Joe Shute BLOOMSBURY (2018)

Size-wise, the king of corvids is the raven. But for journalist Joe Shute, the bird is also an emblem of our age, caught between the ebb of wilderness and the hope of regeneration. In Britain, after a long, catastrophic decline, numbers have bounced back by 45% over the past two decades. Celebrating that fact, Shute gets inside the skin of the 'feathered ape' with the "rhino-horn beak" and aerial virtuosity. That journey becomes a rich and beguiling tangle of cultural and natural history, birding diary and account of corvid fandom — Charles Dickens being one notable devotee.



Making the Monster

Kathryn Harkup BLOOMSBURY SIGMA (2018)

Chemist Kathryn Harkup's scientific contextualization of Mary Shelley's *Frankenstein* at 200 is a worthy addition to a crowded shelf. She explicates how trailblazing discoveries in galvanism, chemistry and anatomy helped to form the bones of the book, while its heart beat to the rhythm of Shelley's radical intellectual lineage and milieu. Harkup's handling of Shelley's own story and the literary alchemy wrought by this brilliant teenager compels, not least on how the science fiction has seeped into science fact. [Barbara Kiser](#)