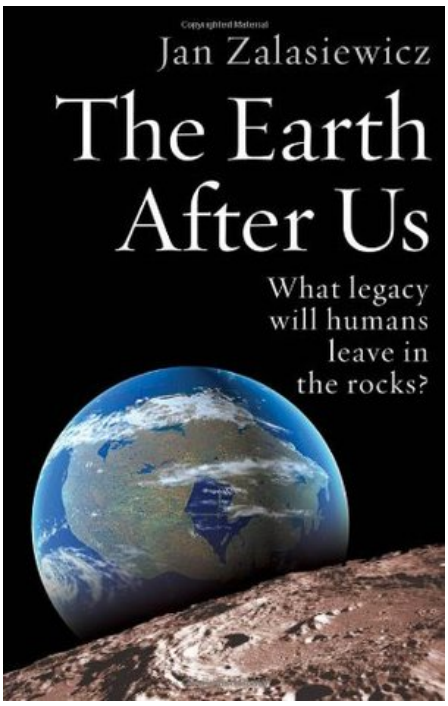

The Earth After Us: What Legacy Will Humans Leave in the Rocks?

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Geologist Jan Zalasiewicz takes the reader on a fascinating trip one hundred million years into the future--long after the human race becomes extinct--to explore what will remain of our brief but dramatic sojourn on Earth. He describes how geologists in the far future might piece together the history of the planet, and slowly decipher the history of humanity from the traces we will leave impressed in the rock strata. What story will the rocks tell of us? What kind of fossils will humans leave behind? What will happen to cities, cars, and plastic cups? The trail leads finally to the bones of the inhabitants of petrified cities that have slept deep underground for many millions of years. As thought-provoking as it is engaging, this book simultaneously explains the geological mechanisms that shape our planet, from fossilization to plate tectonics, illuminates the various ingenious ways in which geologists and paleontologist work, and offers a final perspective on humanity and its actions that may prove to be more objective than any other.

The Earth After Us: What Legacy Will Humans Leave in the Rocks? Details

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From Reader Review The Earth After Us: What Legacy Will Humans Leave in the Rocks? for online ebook

Michael Welland says

Perhaps reflecting the current global issues that cause us to contemplate our mortality and vulnerability as a species, there are several books around (Year Million, The World Without Us) that focus on the post-human earth. However, this one is written by a geologist (which, of course, I see as a good thing).

To geologists, the fact that this account is a humbling one will come as no surprise, but the poverty of our legacy, thoroughly thought through and documented in the book, is, nevertheless, exactly that. While, in this year of Darwin festivities, the imagery of the "tree of life" is under profound revision, our view of our superiority and dominance at the head of that tree is enduring, the arrogance of our species seemingly in-built (if cockroaches were to construct their tree of life, guess who would be perched at the top). Zalasiewicz cleverly examines our understanding of life 100 million years in the past - and its many limitations - to shed light on how thin, paltry, discontinuous and incomplete the "Urban Stratum" will be. Even if we assume, heroically, that our species will accomplish more than few thousand years on the planet, how thick will the stratum representing that period be in the exposed cliffs of 100 million years hence?

There are many possible answers, but the ways in which Zalasiewicz arrives at his, and the journeys he takes us on along the way, make for good reading. The structure is from the point of view of future geologists/archeologists/anthropologists - re-evolved editions of ourselves or alien, it doesn't matter - attempting to discern and reconstruct the nature of the species which dominated the planet for a brief time in the distant past; my one regret was that, as a finale, he didn't include, as pure sicence fiction, a complete chapter from the journals of these folk.

Mareike says

Themen: **Geologie, Paläontologie, Erdgeschichte, Zukunft.**

In Die Erde nach Uns geht Jan Zalasiewicz der Frage auf den Grund, was vom Menschen fossil erhalten werden kann, wenn er stirbt. Dazu lässt er in 100 Millionen Jahren außerirdische Besucher auf die Erde kommen, die unseren Planten untersuchen. Dies ist der Science Fiction Anteil an diesem Buch.

In der ersten Hälfte erklärt Zalasiewicz relativ ausführlich die Grundlagen der geologischen Wissenschaft: Plattentektonik, Fossilisation, Klimaänderungen, Mineralisation, Methoden der Altersdatierung etc. Er geht aber auch auf die Geschichte der Geowissenschaften ein, was ich persönlich interessant fand.

Nachdem der Prozess und die Voraussetzungen für eine erfolgreiche Fossilisation (z.B. im Rhynie Chert oder dem Solnhofener Plattenkalk) beschrieben wurden, führt er am Ende ein Gedankenexperiment durch, mit der Fragestellung:
Was ist von der menschlichen Zivilisation überhaupt fossil überlieferbar? Wie sieht es aus mit mächtigen Bauwerken? Straßen? Kanalisation?

Hierzu führt er häufig Vergleiche mit anderen ausgestorbenen Organismen an, z.B. mit den Dinosauriern oder den Graptolithen. Graptolithen bewohnten die Meere im Ordovizium und Silur, Fossilien gibt es zuhauf,

doch ist oft schwer zu sagen, warum sie aussahen, wie sie aussahen, wozu bestimmte Körperteile dienten und warum sie in einer so großen morphologischen Vielfalt auftraten.
Dies sind Probleme, die in der Paläontologie üblich sind. Manche Rätsel werden wahrscheinlich auch nie gelöst werden, weil Referenzen, also lebende Verwandte, fehlen, die der Untersuchung dienlich wären. Dinosaurier lebten über 100 Mio. Jahre, doch findet man eher selten ein ganzes Exemplar. Knochenfunde sind immer eine Sensation. Die Population ist nur vage abzuschätzen. Genaue Zahlen wird es nicht geben.

Mit den Menschen wird es vermutlich ebenso schlecht aussehen. Doch das ist eigentlich eine gute Sache, wenn man bedenkt, dass massenhaftes Sterben (und damit dann viele Fossilien) zumeist auf große Katastrophen zurückzuführen sind. Der Mensch ist allerdings dabei, eine solche herbeizuführen.

Insgesamt kann ich dieses Buch jedem empfehlen, der sich für Geologie und Erdgeschichte interessiert. Es bietet hierzu einen recht umfangreichen Einblick. Außerdem gibt es ermutigende Schlussworte und eine kritische Auseinandersetzung mit der menschlichen Zivilisation.

Nathan says

When I borrowed this book from the library, I thought I was getting another "how soon will it take buildings to be replaced with rainforest if mankind were to vanish". There is a book about that, with a similar title, but this is not that book. This book is nominally "what fossils and other geological evidence would we leave for future paleontologists, a million years hence?"

I say "nominally", because it's really only that in the last three or four chapters. Until then it's a fascinating introduction to geology. And I say these words as surprised to see them as you are to read them. "Fascinating"? "Geology"? I've never been bitten by geology, despite years of flirting with it: friends are geologists, the great teacher at my kids' school is a geologist, there are books on geology bouncing around the house, geology is part of learning about dinosaurs which we did with the kids for a year, ... But never before have I understood the awe that geologists feel at the beauty of it.

The best books, I am guilty of repeatedly saying, teach you to see the world in a different light. You'll look at something you've seen before and now you'll see moving parts or relationships that you hadn't seen before. Mud, for example, is basically water-eroded rock. The sticky sludge you scrape off your boots on the doormat was once a boulder or peak. Zalasiewicz says, "you might think of the earth as a blue planet or a green planet, but you could equally well think of it as brown: it sits, partially covered in its own decay." This mud, this eroded rock, is the sediment in sedimentary rock, it's what fossils form in. Quartz doesn't erode with water the same way other minerals (rocks) do; the little bits of quartz that don't form mud are sand

I'm sure real geologists are horrified by my Play-Skool level descriptions, but it's the beauty and integration of it that I love. Geology has always been a maze of random and cryptic thisolite and thatolite minerals and Wankozoic era names that leave me cold. They name eras after places in the world where classic rocks from that time are found: Jura mountains for Jurassic, Silure tribe from Wales for Silurian, Devon for Devonian, etc. But that's geology like memorizing sequences of kings is history: it's not names and dates, it's what happened and how and why that's interesting.

It's not just the typical bits of geology either: in addition to mud, the author covers the unique nature of the Earth: the crust in motion, the atmosphere in balance, the history of temperature change, the effects of temperature change on the rock record, and the likely effects of climate change. The author writes like he's

an elderly English academic who loves his field and forgives himself the occasional joke and aside. And, although I never thought I'd say it, I love it too.

David says

This book is somewhat similar to The World Without Us although it takes a much longer view. It imagines an alien race discovering and exploring the earth 100 million years in the future, long after the human species has become extinct. The text offers a good primer on geology as the author shows how the alien explorers would discover the inner workings of the planet: strata formation, plate tectonics, mountain formation and erosion, and the formation of fossils. The central question of the book is: what "fossils" would humans leave behind? Not just human bodily remains but "trace fossils" left in the strata which would indicate our existence. In 100 million years most of our evidence will be wiped away. The best chance for preservation will be coastal cities which just happen to get buried in sediment and quickly converted to rock strata. In the coming century we may create quite a few of these fossil cities if enough ice melts and the sea level rises high enough.

Kent says

This was a pretty interesting and informative read. Much was over my head as I am not a geologist and haven't heard some of this material in quite a while, but interesting nonetheless. This book was not what I was expecting. I was thinking it would be more along the lines of Alan Weissman's book "The World Without Us", but it was a rather different approach on the subject. This book focused mostly about what kinds of fossil remains we as a species would leave behind. A good 75% of the book is just writing on geologic terms and descriptions of various processes that have done on during Earth's geologic history. It adds a neat perspective on the whole idea. Not bad.

Sarah says

An interesting idea badly executed. The author forgets his audience is likely to be the interested amateur.

Todd Martin says

If humans become extinct (or perhaps more accurately, ‘when’ they become extinct) what evidence would be preserved in the Earth’s geologic strata 100 million years in the future? This is the question Jan Zalasiewicz loosely examines in The Earth After Us: What Legacy Will Humans Leave in the Rocks? Although this is a similar premise to Alan Weisman’s book The World Without Us, Zalasiewicz approaches the topic from a geological and paleontological point of view.

While the premise is moderately interesting, the bulk of the book focuses on an explanation of current and past geological events and the processes which lead to fossilization – a subject that is more interesting than the thought experiment in my opinion. Zalasiewicz does quite a good job delving into the sciences of plate tectonics, climate change, fossilization, and paleontology to explain the uniform processes at work which

slowly alter the face of the planet. In the final chapters he theorizes the extent to which man-made artifacts and human remains will be preserved. The answer isn’t a big surprise. The extent to which we’re changing the face of the planet today will leave evidence of our presence for some time to come.

Loraine says

Jan Zalasiewicz grabbed me as soon as he described strata as the archives of earth's geological history. I learned more about earth science in this elegant little book than I imagined possible. I actually grasp concepts like turbidity and geological formations like turbite fans, specialties like sequence stratigraphy, and the elegance of plate tectonics. Occasionally, I glanced through a window into deep time. What will the Urban Strata reveal of us 100 million years hence? Read this wonderful book and find out. We may not fare well, given that in a blink of an eye (in geological time) we have changed the face of the earth, causing the Sixth Great Extinction.

Sic transit gloria mundi~

Kevin Fanning says

Was really looking forward to this, but the title and description are pretty misleading. It's really just a lecture on how geology works, and why so few things get preserved as fossils. It's not until Chapter 8 (out of 10!) that he finally gets into "OK, so what will humans have left behind in 10,000 years?) And that part is interesting--why New Orleans is more likely to be preserved than Denver, for instance. But it doesn't go far enough (I was hoping he'd cover something like the Waste Isolation Pilot Plant) and the writing never really drew me in. I'd recommend The World Without Us and A Short History of Nearly Everything instead.

Richard says

Look back a hundred million years to the mid-Cretaceous period: how accurate a picture of that world do we have today? Well, we know quite a bit about its marine life (shallow seas, which were widespread then, are by far the best environments for the preservation of fossils), but our knowledge of the deep oceans and of life on land is a lot more patchy. Take dinosaurs as a good example: we know a decent amount about lowland species, but comparatively nothing about those of the uplands and mountains.

Now go *forwards* by the same amount: what sort of picture of *our* world, of 21st-century Earth, would future palaeontologists have? In particular, would they even know that *Homo sapiens* had been here at all? Your immediate reaction might be to think of all those millions of square miles of concrete and tarmac, of all the gigantic constructions—both above and below ground: well of *course* they'd know we'd been here! But, in fact, it's not quite the obvious question it seems at first—the year 100,000,000 A.D. is mind-numbingly remote. In the interim there would have been both the building and eroding away of entire mountain ranges; the planet's crust would have been crumpled, faulted, melted; there may have been large-scale volcanism, major changes in sea level and encroachments of the polar ice caps. Would *any* traces of our civilisation really survive all this—and, if so, what exactly? What would the surviving artefacts actually *look* like?

This is a super topic for a book—but *The Earth After Us* just doesn't get to grips with it. It begins well enough, setting the idea up: alien scientists land on Earth a hundred million years from now and, as a whole series of geological anomalies gradually comes to light, realisation dawns that something unusual may have

happened here in the distant past. Unfortunately, the author then largely abandons this idea in favour of a textbook: we get overviews of stratigraphy, plate tectonics, palaeontology and so on—which would be fine (I love geology) except that that's not the book I thought I'd be reading. Even when we do return to the subject during the final couple of chapters, it's still not dealt with in anywhere near enough detail. The feeling I had while reading this book is that, while well written and factually very good, what it suffers from is a fatal lack of imagination. A frustrating read overall.

Annick says

I was curious of reading this book after having discovered the author in a blog. Jan Zalasiewicz is a British geologist author of The Planet in a Pebble and the present book The Earth After Us. Jan Zalasiewicz imagines a far-future without humans. For that matter, he explores the past of the earth to understand what legacy ancient species left in the rocks — fossils — and the reason of their extinction — climate change, activities of ancient species, and the geological mutation of the earth.
With human domination (the so-called Anthropocene era), hungry for natural resources, a question arises: our era will be shorter than the preceding eras as we contribute to the acceleration of climate change (global warming, rising sea level, natural resources shortage). This book provides clues and fascinating stories. Examples: High Water, Low Water: "The three places continue to be a puzzle. Liquid water, water vapour, and, on some of the higher peaks, a little water ice. How long has this been so? It seems the optimal arrangement for the peculiar biology, yet the central sun here has, of course, evolved. So how has such stability been maintained? One might wish for someone to have put in place a time-series water-phase recorder in place at the birth of this planet. It might explain much, if we but had one." "Our far-future explorers will arrive on an Earth with a land — sea geography different from today's, as plate tectonics will have well-established, seemingly stable coastlines — wherever those coastlines might happen to be. This direct observations of such visitors to Earth will be, at least initially, too short-term to deduce whether sea level on this ocean-dominated planet changed at all, let alone whether it showed trends or patterns. The land — sea arrangement, and the shorelines, will appear to be a constant. The slate here will start blank."
However extinction humans may face, microbes will adapt to change: "Microbes are adaptable and evolve quickly and — so to speak — learn new tricks, by virtue of trial and error carried out by many trillions of individuals producing several generations each day; witness how quickly pathogenic microbes have become resistant to antibiotics in recent years." "As the oxygen spread across the oceans, and slowly began leaking out into the atmosphere, the ancient régime microbes, those that could only function in an oxygen-free environment, retreated as a protracted hecatomb of their numbers and of their diversity began to take place. They are still here on Earth, of course, but they are now restricted to those parts of it where oxygen does not reach, within deep rocky crevices and stagnant organic-rich muds. These environments are not rare, admittedly, but the anoxic bugs no longer have the planet to themselves. The microbes evolved, inevitably, forms that not only tolerated oxygen but could exploit this highly reactive stuff as a marvellous energy provider, using it to burn hydrocarbons to obtain energy."
and so on…
I'm planning to read his second book The Planet in a Pebble, I hope, with the same enthusiasm…

Margie says

This book reinforced two ideas that I should have accepted by now: I know more than the average bear about geology,and books should never, never be written entirely in a sans-serif font.

I've been working with earth scientists for ten years, so it would make sense that I know something about the topic. And as an undergrad in Advertising, I had to study typefaces. So both of these ideas should have sunk in by now. I'm glad Zalasiewicz proved them right.

I was especially interested in reading this book because I've heard rumors (don't tell) that this question keeps popping up in oral exams. And now I have a fairly good sense of what the answer might be.

I really appreciated the way in which Zalasiewicz explains how tectonics and climate change work together to affect the Earth's surface. The explanations were very clear without being dumbed-down. It is of course pop science, even with some humor thrown in, but I noted that there were parts that I might not have understood fully if I didn't already have some exposure to the basic principles.

I enjoyed it so much that now I'm going to have to get my own copy. While reading it I kept thinking, "Oh, there's a good question for me to ask of a geodecist (or a stratigrapher, or a atmospheric scientist, etc.)" I want to mark up a copy and then bother my students and faculty with all sorts of questions.

By the way, New Orleans wins, y'all.

Hayley Dunning says

Mind-expanding take on familiar subject.

Nikki says

This starts off as being just an explanation of how geology works — deposition over time, the way rocks are transformed and eroded, etc, etc. The last couple of chapters start getting into the stuff I’m really interested in: how material remains of humans might weather and last, to be found for potential future alien archaeologists. I didn’t really love Zalasiewicz’s attempts at sci-fi, with his commentary on these alien archaeologists/anthropologists and what they might think. Like most people, he sticks too close to the way humans think, and doesn’t try and figure out what the alien equivalent of “it must be for ritual purposes” might be.

(For instance, imagine a society entirely driven by scientific experiment. Instead of interpreting everything as ritual, they’d assume it was an attempt to find out what would happen if you did x and y! And then they’d try it for themselves! Doesn’t that sound interesting as an idea?)

Mostly pretty standard stuff, but the last couple of chapters were worth it.

Reviewed for The Bibliophibian.

Carlos says

This book was just all over the place. The author uses the premise of alien explorers 100 million years into the future visiting Earth to explain to the lay reader the principles of geology while also sneaking in an environmental message. This results in a book that is almost built on digressions. One moment the author is discussing plate tectonics, next, he is giving an extremely thorough example of the animal life in a particular strata and then he manages to insert an environmental message as he winds back to plate tectonics. Sometimes the digressions are enjoyable but for the most part I found them rather distracting and annoying. While the book does give you a great introduction of the workings of the earth, I did not find it particularly engaging.
