Reading a book – maybe more fun than you thought

Reading from a selection of books might be entertaining or even fascinating. The three recommendations here are based on reviews recently published in Science.

This blog aims to make the reader aware of recent developments in science of interest to public health. The weekly journal Science and other international periodicals are regularly examined to follow advances. *Science* features in every issue the review of a book for its learned readership to expand general knowledge of how the world function and is shaped. Here are three publications waiting to go through.

Can evolution explain our existence?

The first book challenges the belief that this world, as we know it, is merely the result of what happened throughout evolution. Sean B. Carroll, the author of '*A Series of Fortunate Events: Chance and the Making of the Planet, Life and You*' explores the impact of poor chances. (1). Chances rule genetic diversity, the immune system can come up with ten billion different antibodies, and the genetic setting of a particular person is one of seventy trillion possibilities that could have originated from the parents. Humans and other mammals played an insignificant role as long as the dinosaurs ruled the scene. Thirty minutes they changed that all. Had the tremendous asteroid impact on the Yucatán peninsula occurred half an hour before or later, the actual impact would have directed the asteroid into the Atlantic or Pacific Ocean. The consequences of the natural catastrophes might have been less severe for the dinosaurs and all the species that became distinct. Unfortunately, we must realize that chances work both ways, fighting against invading microbes and triggering cancer. The conclusion is that we are all here by luck and should make the best of it.

The sudden death of the dinosaur and what happened after that.

The dinosaurs had many million years to develop into the ruling creatures of their world, just only erased from it in a fastidious moment. However, they are particularly familiar with in Isan, the Northeast of Thailand. There are two museums within a short ride by car in the vicinity of Khon Kaen University. Back-up Khon Kaen and neighboring provinces are not short of creating the impression that one would meet one of the *Phuwingosaurus Sirindhornaue* around the next corner as if their existence didn't end abruptly sixty-six million years ago. Bones found in the Phuwing District of the Khon Kaen province stemmed from 15 meters high creature with a long tail. It was named in honor of H.R.H Princess Chakri Sirindhorn. So, the last moment of the dinosaurs and what followed after them will be of interest locally and beyond. According to the book by Riley Black, '*The Last Days of the Dinosaurs: An Asteroid, Extinction, and the Beginning of Our World*,' what hit the Yucatán Peninsula in Mexico was the size of Mount Everest (2). The event abruptly ended the Mesozoic era, lasting almost 80 million years, from 145 million to 66 million years before us. Together with the dinosaurs, 65% of all species were wiped out. Black's book sticks out from many other publications about the dinosaurs by concentrating on the first hour, day, month, and years of the following Cenozoic era. It mentions what happened to known species of huge animals but also concentrates on small and lucky

survivors, such as frogs, snakes, turtles, and crocodiles. It elaborates on further developments in various chapters, up to one million years after the singularity event. For this, he moved around different geographic areas of the planet. What could be learned from this period of Earth's history is about the 'limitations of adaptation and natural selection evolving after an abrupt change in the environment.' The reader learns how the present mammals developed within the space left by the dinosaurs, favoring 'small and unfussy creatures over large and specialized ones.'

The Earth's history

The Mesozoic Era, abruptly ending together with the dinosaur, was one of the warmest periods in the world's history. The continents were not entirely shaped as they are known to us now. They were free of ice, including the North- and South Poles. Sea levels were 170 meters higher. Knowing that the globe has existed for 4.6 billion years already should give us another view of climate change. With the book by Thomas Halliday, '*Otherlands: A Journey Through Earth's Extinct Worlds*,' an entertaining and enlightening voyage is on hand (3).

To cover important steps of what happened in the world's history, different points in time, covering millions of years in the past, are centered at. One is invited to visit certain places when going through the internet and looking at the sides mentioned in the book. For instance, a Paleontological Expedition to the Madygen Geopark in Kyrgyzstan is offered in August 2023. Here the outstanding landscapes of the Mesozoic period can be seen and studied, bringing you back 225 million years ago. Other places are more common for a trip into the past. One could travel to Rhynie, Scotland, to see the oldest known fossils on land in the form of 407-million-year-old amoebae in the Lower Devonian Rhynie chert, rocks similar to petrified wood.

Important historical locations are mentioned in the context of events. So, for instance, early hominids, Australopithecus, brought themselves to safety by climbing up lianas about 4 million years ago. Another scenario involves a group of horses on the Bering land bridge during icy weather, running away from cave lions at the end of the last ice age.

While dinosaurs and many other creators of the world sixty-six thousand years ago succumbed to nitric and sulfuric acid rain, which also made the Oceans toxic, another event, much later, called the Zanclean flood, caused an isolated but still very dramatic end to unique animals such as huge gees, like the enormous flightless *Garganornis ballmanni*, and tiny deer-like ruminants. Gargano is a place in Italy, which, six million years ago, was an island that was drowned by water when the Mediterranean basin was filled in with water from the Atlantic when the Gibraltar Street opened.

Is there a conclusion?

Based on the first written testimony from Egypt, human history is only about 5,000 years long. After going through these books, one might lean back and think about the time dimension we covered in our thoughts trying to follow the planet's history. Our present problems seem to shrink into a negligible size. Over millions of years, several ice ages covered this globe. The human species, probably derived from Africa, invaded the North. The last ice age drove humans back to Africa before returning to Europe and East Asia. By now, the temperature is fluctuating

in a range, allowing us to survive quite well. Prehistoric evidence shows that warmer climate periods were favorable. We shouldn't be too serious about man-made global warming. However, presently we are at war with atomic weapons on hand, so forceful that they might have the same effect as the Chicxulub asteroid.

Reviews:

1. Knight I. A Series of Fortunate Events 2020 [Available from: https://www.science.org/doi/10.1126/science.abe2994.
2. Arbour V. Inside the dinosaurs' demiseThe Last Days of the Dinosaurs: An Asteroid, Extinction, and the Beginning of Our World Riley Black St. Martin's Press, 2022. 304 pp 2022 [updated Apr 22. 2022/04/22:[360]. Available from: https://www.science.org/doi/10.1126/science.abo7409.
3. Grande L. Vivid snapshots of the past [Science, Vol 375,Issue 6581]. Science2022 [Available from: https://www.science.org/doi/10.1126/science.abn5448.

Books recommended:

Sean B. Carroll
A Series of Fortunate Events: Chance and the Making of the Planet, Life, and You
Princeton University Press

Riley Black
The Last Days of the Dinosaurs: An Asteroid, Extinction, and the Beginning of Our World
St. Martin's Press 2022

Thomas Halliday
Otherlands: A Journey Through Earth's Extinct Worlds
Random House 2022

The three books can be looked at and read at the library of the Faculty of Public Health and can be easily purchased internationally.

Frank P. Schelp is responsible for the manuscript's content, and the points of view expressed might not reflect the stance and policy of the Faculty of Public Health, Khon Kaen University, Thailand.

For comments and questions, please contact <awuso11@gmail.com>