tpo_33_passage_2

It was not until the Cambrian period, beginning about 600 million years ago, that a great proliferation of macroscopic species occurred on Earth and produced a fossil record that allows us to track the rise and fall of biodiversity. Since the Cambrian period, biodiversity has generally risen, but there have been some notable exceptions. Biodiversity collapsed dramatically during at least five periods because of mass extinctions around the globe. The five major mass extinctions receive most of the attention, but they are only one end of a spectrum of extinction events. Collectively, more species went extinct during smaller events that were less dramatic but more frequent. The best known of the five major extinction events, the one that saw the demise of the dinosaurs, is the Cretaceous-Tertiary extinction. Starting about 280 million years ago, reptiles were the dominant large animals in terrestrial environments. In popular language this was the era "when dinosaurs ruled Earth," with a wide variety of reptile species occupying many ecological niches. However, no group or species can maintain its dominance indefinitely, and when, after over 200 million years, the age of dinosaurs came to a dramatic end about 65 million years ago, mammals began to flourish, evolving from relatively few types of small terrestrial animals into the myriad of diverse species, including bats and whales, that we know today. Paleontologists label this point in Earth's history as the end of the Cretaceous period and the beginning of the Tertiary period, often abbreviated as the K-T boundary. This time was also marked by changes in many other types of organisms. Overall, about 38 percent of the families of marine animals were lost, with percentages much higher in some groups. Ammonoid mollusks went from being very diverse and abundant to being extinct. An extremely abundant set of planktonic marine animals called foraminifera largely disappeared, although they rebounded later. Among plants, the K-T boundary saw a sharp but brief rise in the abundance of primitive vascular plants such as ferns, club mosses, horsetails, and conifers and other gymnosperms. The number of flowering plants (angiosperms) was reduced at this time, but they then began to increase dramatically. What caused these changes? For many years scientists assumed that a cooling of the climate was responsible, with dinosaurs being particularly vulnerable because, like modern reptiles, they were ectothermic (dependent on environmental heat, or cold-blooded). It is now widely believed that at least some species of dinosaurs had a metabolic rate high enough for them to be endotherms (animals that maintain a relatively consistent body temperature by generating heat internally). Nevertheless, climatic explanations for the K-T extinction are not really challenged by the idea that dinosaurs may have been endothermic, because even endotherms can be affected by a significant change in the climate. Explanations for the K-T extinction were revolutionized in 1980 when a group of physical scientists led by Luis Alvarez proposed that 65 million years ago Earth was struck by a 10-kilometer-wide meteorite traveling at 90,000 kilometers per hour. They believed that this impact generated a thick cloud of dust that enveloped Earth, shutting out much of the incoming solar radiation and reducing plant photosynthesis to very low levels. Short-term effects might have included huge tidal waves and extensive fires. In other words, a series of events arising from a single cataclysmic event caused the massive extinctions. Initially, the meteorite theory was based on a single line of evidence. At locations around the globe, geologists had found an unusually high concentration of iridium in the layer of sedimentary rocks that was formed about 65 million years ago. Iridium is an element that is usually uncommon near Earth's surface, but it is abundant in

some meteorites. Therefore, Alvarez and his colleagues concluded that it was likely that the iridium in sedimentary rocks deposited at the K-T boundary had originated in a giant meteorite or asteroid. Most scientists came to accept the meteorite theory after evidence came to light that a circular formation, 180 kilometers in diameter and centered on the north coast of the Yucatán Peninsula, was created by a meteorite impact about 65 million years ago.

question 1

Paragraph 1 supports which of the following statements about life on Earth before the Cambrian period?

A Biodiversity levels were steady, as indicated by the fossil record.

B Levels of biodiversity could not be tracked.

C The most dramatic extinction episode occurred.

D Few microscopic species existed.

question 2

Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

A The dominance of dinosaurs came to an end 65 million years ago, at which time mammals began to flourish and diversify.

B Because no group of species can remain dominant forever, mammals became the dominant group when dinosaurs became extinct.

C After being the dominant group for more than 200 million years, the age of dinosaurs came to a dramatic end 65 million years ago.

D The diverse group of mammals that we know today, including bats and whales, evolved from small terrestrial forms that had been dominated by dinosaurs.

question 3

According to paragraph 2, why are dinosaurs popularly said to have "ruled Earth" during the Cretaceous period?

A Dinosaurs were the only species of reptile that existed during the whole of the Cretaceous period.

B Dinosaurs won the battle for food resources over mammals during the Cretaceous period.

C Dinosaurs survived extinction during the Cretaceous period, whereas many other animal species did not.

D Dinosaurs were the physically and ecologically dominant animals during the Cretaceous period.

question 4

According to paragraph 2, which of the following species initially increased in number at the K-T boundary?

A Dinosaurs

B Foraminifera

C Ferns

D Ammonoid mollusks

question 5

Why does the author note that "even endotherms can be affected by a significant change in the climate" ?

A To argue that there was a significant climate change at the time that endothermic dinosaurs became extinct

B To argue that climate change caused some dinosaurs to evolve as endotherms

C To support the view that at least some of the dinosaurs that became extinct were endotherms

D To defend climate change as a possible explanation for the extinction of dinosaurs

question 6

According to paragraph 4, all of the following contributed to the massive

extinctions of the K-T period EXCEPT

A tidal waves

B fires

C insufficient solar radiation

D iridium

question 7

According to paragraph 4, which of the following statements explains the importance of the discovery of high levels of iridium in rocks?

A It provided evidence that overexposure to solar radiation led to the K-T extinction.

B It showed that more than one cataclysmic event was responsible for the K-T extinction.

C It suggested that the cause of the K-T extinction may have been a meteorite striking Earth.

D It provided evidence that the K-T extinction occurred 65 million years ago.

question 8

According to paragraph 4, which of the following is true about the Yucatán Peninsula?

A The circular formation there was caused by a meteorite impact 65 million years ago.

B Sedimentary rocks from that area have the lowest iridium concentration of any rocks on Earth.

C There is evidence that a huge tidal wave occurred there 65 million years ago.

D Evidence found there challenges the meteorite impact theory.

question 9

Which of the following can be inferred from paragraph 4 about the meteorite theory?

A The data originally presented as evidence for the theory were eventually rejected.

B Many scientists did not accept it when it was first proposed.

C It has not been widely accepted as an explanation for the K-T extinction.

D Alvarez subsequently revised it after a circular formation was found in theYucatán Peninsula.

question 10

Look at the four squares [ ] that indicate where the following sentence could be added to the passage.

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dramatically. What caused these changes? For many years scientists assumed that a cooling of the climate was responsible, with dinosaurs being particularly vulnerable because, like modern reptiles, they were ectothermic (dependent on environmental heat, or cold-blooded). It is now widely believed that at least some species of dinosaurs had a metabolic rate high enough for them to be endotherms (animals that maintain a relatively consistent body temperature by generating heat internally). Nevertheless, climatic explanations for the K-T extinction are not really challenged by the idea that dinosaurs may have been endothermic, because even endotherms can be affected by a significant change in the climate. Explanations for the K-T extinction were revolutionized in 1980 when a group of physical scientists led by Luis Alvarez proposed that 65 million years ago Earth was struck by a 10-kilometer-wide meteorite traveling at 90,000 kilometers per hour. They believed that this impact generated a thick cloud of dust that enveloped Earth, shutting out much of the incoming solar radiation and reducing plant photosynthesis to very low levels. Short-term effects might have included huge tidal waves and extensive fires. In other words, a series of events arising from a single cataclysmic event caused the massive extinctions. [] Initially, the meteorite theory was based on a single line of evidence. [] At locations around the globe, geologists had found an unusually high concentration of iridium in the layer of sedimentary rocks that was formed about 65 million years ago. [] Iridium is an element that is usually uncommon near Earth's surface, but it is abundant in some meteorites. [] Therefore, Alvarez and his colleagues concluded that it was likely that the iridium in sedimentary rocks deposited at the K-T boundary had originated in a giant meteorite or asteroid. Most scientists came to accept the meteorite theory after evidence came to light that a circular formation, 180 kilometers in diameter and centered on the north coast of the Yucatán Peninsula, was created by a meteorite impact about 65 million years ago.