

# Important fossil finds have lesser-known role in Darwin's theory of evolution

By The Guardian, adapted by Newsela staff on 05.30.18

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A visitor to the traveling Darwin exhibit passes a display of animal skeletons at the American Museum of Natural History in New York City. Photo by: Mary Altaffer/ AP Photo

On September 23, 1832, a young naturalist named Charles Darwin found the fossil of an enormous skull embedded in soft rock. It took him three hours to chip it out of the cliff face at Punta Alta in Argentina, and hours more to lug it back to base. He arrived with it long after dark at the ship that became the most famous in the history of natural science: the Beagle.

Darwin was only 24, a college dropout from his medical degree who had done a crash course in geology in order to join the voyage. He was wild with excitement about it, writing in a letter to a friend: "I have just got scent of some fossil bones of a Mammoth, what they may be I do not know, but if gold or galloping will get them, they shall be mine."

## **Fossils Recorded And Labeled By Four-Color System**

Darwin's treasures were brought on board after every shore trip, to the exasperation of the crew of the small, cramped ship. Then, they were sent back to England whenever he came upon a vessel making the return journey. Darwin's finds were all meticulously recorded in his journals, and labeled according to a four-color system of his devising.

Darwin, of course, went on to develop the theory of evolution. His fossils have a lesser known role in the development of that theory than his observations of wildlife. Nonetheless, they are among the treasures of the Natural History Museum in London. They are still of interest to scientists all over the world, but many of the originals are almost too fragile to handle.

## **Digitally Recreating Fossils in 3D**

In April, however, the museum launched an ambitious project to scan and digitally recreate the fossils in 3D. They are being replicated in such minute detail that they can be studied by scientists and pored over by members of the public. One of the first completed replicas has just been digitally dissected by a scientist in Montpellier, France.

The digitization also guarantees that a permanent record of the bones will be preserved as scientific tests on the originals continue. Carbon dating has recently confirmed a date for one that Darwin could only have guessed from the rock layer in which he found it. The bone is just 12,660 years old, so very close to the extinction of its species. Now, the museum will attempt to extract DNA from the fossil.

## **Gigantic Rodent Found To Be Rhino Relative**

The first replica to go online is the skull of *Toxodon platensis*, which Darwin found propped up against a fence in a Uruguayan farmer's yard. The local children had been throwing stones at it and had knocked out its teeth. Darwin bought the skull for a small sum of money. Its curved teeth led Darwin and fellow scientists to wonder if it was a gigantic rodent, but it was eventually identified as a distant relative of the rhinoceros — and the last member of a group of South American mammals stretching back 60 million years.

## **Heaviest Land Mammal Ever To Live In South America**

As they arrived back in England, Darwin's fossils were already becoming famous and making his reputation, though he still had years of the voyage ahead. One batch contained a missing section of a skeleton that had already been sent back by another collector — the creature whose skull

Darwin had chipped out of the cliff face. They were the remains of Megatherium, a ground-dwelling relative of modern tree-dwelling sloths. However, Megatherium was the size of a car, making it the largest and heaviest land mammal ever to live in South America.

After the fossils were displayed at a science event in London, one friend wrote to Darwin: "From sending home the much-desired bones of Megatherium your name is likely to be immortalized." In fact, Megatherium and its relationship to modern animals was one of the observations that would set Darwin's mind on the course that would lead to his groundbreaking theory of evolution.

## **Fossil Chunk Tracked Down After More Than A Century**

Back at the Natural History Museum, senior curator Pip Brewer and researcher Adrian Lister share Darwin's excitement for fossils and what they can teach us. These researchers have just tracked down a chunk of one of Darwin's fossils that had been missing for more than a century.

The two men launched an international hunt for Darwin fossils as part of the digitization project. Most of the bones already at the museum had come from the Royal College of Surgeons after World War II, who had the best comparative anatomy collection. The huge skull remains with the college, and other bones went to Harvard in the 19th century. The missing slice of the skull that Darwin chipped out of the Argentinian cliff in 1832 turned up in his own home, Down House, now a museum run by English Heritage.

"They told us they had a bit of tooth in the stores but they had no idea what it was. When we got there, they had had it laid out on a table and we recognized it as the missing piece of Megatherium in seconds," Lister said. They later brought the fossil to the Royal College of Surgeons, and could see instantly how perfectly the cut marks matched with the rest of the skull.

"It wasn't quite as dramatic as Darwin's discovery of it — but it was still such a thrill," Brewer added.

**Quiz**

1 Read the first 3 paragraphs of the article.

Why did the author begin the article by describing Darwin's efforts to recover and record fossils?

- (A) to indicate the reasons why Darwin's fossils have become fragile
- (B) to illustrate Darwin's dedication to the discovery and study of fossils
- (C) to emphasize the role of Darwin's scientific training in his discoveries
- (D) to explore the reactions of crew members to Darwin's collections

2 Which statement BEST represents scientists' current approach to Darwin's fossils?

- (A) Scientists are digitizing copies and trying to find all the pieces of Darwin's fossils because they want to preserve a record for the future as they continue to study the originals.
- (B) Scientists are digitizing copies and trying to find all the pieces of Darwin's fossils because they have recently discovered that some of them were originally incorrectly dated.
- (C) Scientists are searching for pieces of Darwin's most important fossils to digitize because they fear that they will lose many of the small pieces in the future.
- (D) Scientists are searching for pieces of Darwin's most important fossils to digitize because they must return the original fossils to the countries they came from.

- 3 Read the following paragraph from the section "Gigantic Rodent Found To Be Rhino Relative."

*The first replica to go online is the skull of *Toxodon platensis*, which Darwin found propped up against a fence in a Uruguayan farmer's yard. The local children had been throwing stones at it and had knocked out its teeth. Darwin bought the skull for a small sum of money. Its curved teeth led Darwin and fellow scientists to wonder if it was a gigantic rodent, but it was eventually identified as a distant relative of the rhinoceros — and the last member of a group of South American mammals stretching back 60 million years.*

What can be inferred from this paragraph?

- (A) Darwin's discovery of the *Toxodon platensis* is the most important of all the fossils he recovered on his trips.
- (B) Darwin had a hard time identifying the fossil because he was more familiar with rodents than rhinoceroses.
- (C) Darwin's efforts led to the identification of fossils that might otherwise have been destroyed or undiscovered.
- (D) Darwin would have paid much more for the fossil if he had known how important it was going to be.

4 Read the statement below.

*The theory of evolution would not have been possible without Darwin's early explorations of fossils.*

Which selection from the article BEST supports this statement?

- (A) His fossils have a lesser known role in the development of that theory than his observations of wildlife. Nonetheless, they are among the treasures of the Natural History Museum in London.
- (B) Carbon dating has recently confirmed a date for one that Darwin could only have guessed from the rock layer in which he found it. The bone is just 12,660 years old, so very close to the extinction of its species.
- (C) After the fossils were displayed at a science event in London, one friend wrote to Darwin: "From sending home the much-desired bones of Megatherium your name is likely to be immortalized."
- (D) In fact, Megatherium and its relationship to modern animals was one of the observations that would set Darwin's mind on the course that would lead to his groundbreaking theory of evolution.

## Answer Key

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