

Nonfiction



AS YOU READ,
THINK ABOUT:

Why are dinosaur fossils so important to science?

The

Girl Who Discovered Dinosaurs



**NARRATIVE
NONFICTION**
Reads like fiction—
but it's all true

How a 12-year-old girl made an incredible discovery that changed the world

BY LAUREN TARSHIS



In 1811, on a windy beach in southern England, a 12-year-old girl made a discovery that shocked the world. The girl was Mary Anning, and she lived in a tiny seaside town called Lyme Regis. Her beloved father had died just a few months before, leaving the family penniless. 

BRIAN JACKSON/ALAMY (DINOSAUR); DORLING KINDERSLEY/GETTY IMAGES/SUPERSTOCK (ANNING); SHUTTERSTOCK (EARTH); SCIENCE SOURCE (FOSSIL)

Mary had been close to her father. From the time she was a little girl, they had gone together to the beach a mile from their house to search for unusual shells and rocks they could sell.

But this latest discovery was different from anything Mary had ever seen. It was the 17-foot-long skeleton of a creature with the face of a crocodile, the body of a lizard, the flippers of a dolphin, and the tail of a shark. It seemed like a monster from a storybook.

But as the world would soon learn, Mary's creature came from a place far more fantastic than any book. The animal was a giant marine reptile that would later be named *Ichthyosaurus*. And it had lived perhaps 200 million years ago, during the time of the dinosaurs.

A Dazzling World

Imagine what it was like to see such a skeleton in 1811, when not a person on Earth had heard of—or imagined—dinosaurs. Today, scientists have given us a dazzling picture of what the Earth was probably like 200 million

Right: In the 1800s, “dinomania” swept Europe and America. Paleontologists competed to find the most spectacular fossils, like this leg bone of a large dinosaur. Later, museums built great halls to display the most dramatic finds. **Far right:** In 1997, the Field Museum of Chicago paid more than \$8 million for the largest *T. rex* fossil—nicknamed Sue—ever discovered.

years ago. We can almost feel the hot and steamy air and see the vast shallow oceans crowded with ichthyosaurs and other marine reptiles, some as big as cars. On land, of course, there were the giants—the ferocious *Allosaurus* with its monstrous jaws; the towering *Brachiosaurus*, its head seeming to skim the clouds; and the lightning-fast *Dilophosaurus* with its slicing claws. There were likely thousands of different kinds of dinosaurs that thrived on

Earth during the various prehistoric eras, but they

died out millions of years before humans appeared.

This world was completely unknown when Mary **unearthed** the giant skeleton on the beach that day. The most respected scientists of the day believed that Earth was only about 6,000 years old. Few accepted the idea that an animal could become extinct. The word *dinosaur* did not yet exist.

Monsters and Giants

Before the 1800s, there had been impressive fossil finds: mysterious bones jumbled together in dried riverbeds, gruesome skeletons smiling out from cliffsides, monstrous footprints **embedded** in rocks.

How did people explain such discoveries?

It's likely that many of the giants and monsters from ancient myths were in fact inspired by fossil discoveries.

If you were to look closely at a 3,000-year-old drawing of the mythical griffin, a half eagle, half lion that the Greeks



believed guarded gold mines, you could see that its body structure is strikingly similar to that of the *Protoceratops*, a four-legged dinosaur with a giant beak. It's possible that gold miners in the Gobi Desert in Asia discovered *Protoceratops* skeletons, which are plentiful in that region. Is it surprising that they imagined these skeletons—with giant-beaked skulls and long spiny tails—belonged to monsters? (And were they so wrong?)

By the 19th century, many believed that fossil skeletons were the remains of animals that still existed but were tucked away in the far-off corners of the world. In 1801, a farmer in New York discovered the complete skeleton of an enormous animal in one of his fields. The skeleton attracted hordes of people when it was displayed in a Philadelphia museum.

But what was it? An unknown species of **carnivorous** elephant perhaps?

Scientists were convinced that this animal was lurking somewhere in America. The question was where.

Two years later, President Thomas Jefferson sent two men—Meriwether Lewis and William Clark—to lead a team of explorers into the American West, which was at the time



an unmapped wilderness. Lewis and Clark brought home **specimens** of many birds, reptiles, and mammals. But much to Jefferson's disappointment, they brought no giant elephants.

A few years later, the New York farmer's famous skeleton was identified at last. It was a mastodon, a large elephant-like land mammal that once roamed throughout North America. It became extinct about 10,000 years ago.

New Ideas

It was only a few years after Lewis and Clark returned that Mary unearthed her skeleton. Her brother spotted it first: a 4-foot-long skull embedded in the sand, its saucer-sized eye peeking out. Mary found the rest. For months, she returned to the beach every day, braving roaring waves and

Experts say that the mythological griffin (left) was inspired by fossilized *Protoceratops* skeletons (above).



falling rocks. Locals grew accustomed to the sight of Mary, bundled up in a tattered coat, her hair snarled by the salty air. She painstakingly chipped away at the rock surrounding the skeleton. It took four men to help her carry it home. She quickly sold it, earning enough money to

feed her family for months. Soon the skeleton was put on display at a small London museum, where it became a popular attraction.

Mary's skeleton was one of the most important fossils ever discovered. When she found it, new ideas—that Earth was far older than previously imagined, that fossils were **remnants** of long-extinct animals—had already been simmering. Many scientists saw Mary's fossil—which, unlike the mastodon



skeleton, clearly did not belong to any creature living on Earth—as proof that animals could become extinct. Her discovery helped ignite an entirely new field of science, **paleontology**, that was dedicated to studying fossils. Our understanding of Earth’s natural history was about to change completely.

New Discoveries

Over the next few decades, Mary made several more important fossil discoveries. Scientists traveled to Lyme Regis to comb the beach with her, to hear her opinions, and to discuss new ideas.

So why isn’t Mary Anning as famous as Thomas Edison, Albert Einstein, or other important

scientists from history?

The reason is simple: Mary was a woman. At the time, even brilliant, talented, and wealthy women were barred from colleges and most professions. European and American scientists in Mary’s day were almost exclusively wealthy men from important families. Many of them met Mary and marveled over her knowledge and unique talents for finding and identifying important specimens, but they never invited her to join their scientific organizations or write articles for their magazines. Some actually took credit for her discoveries.

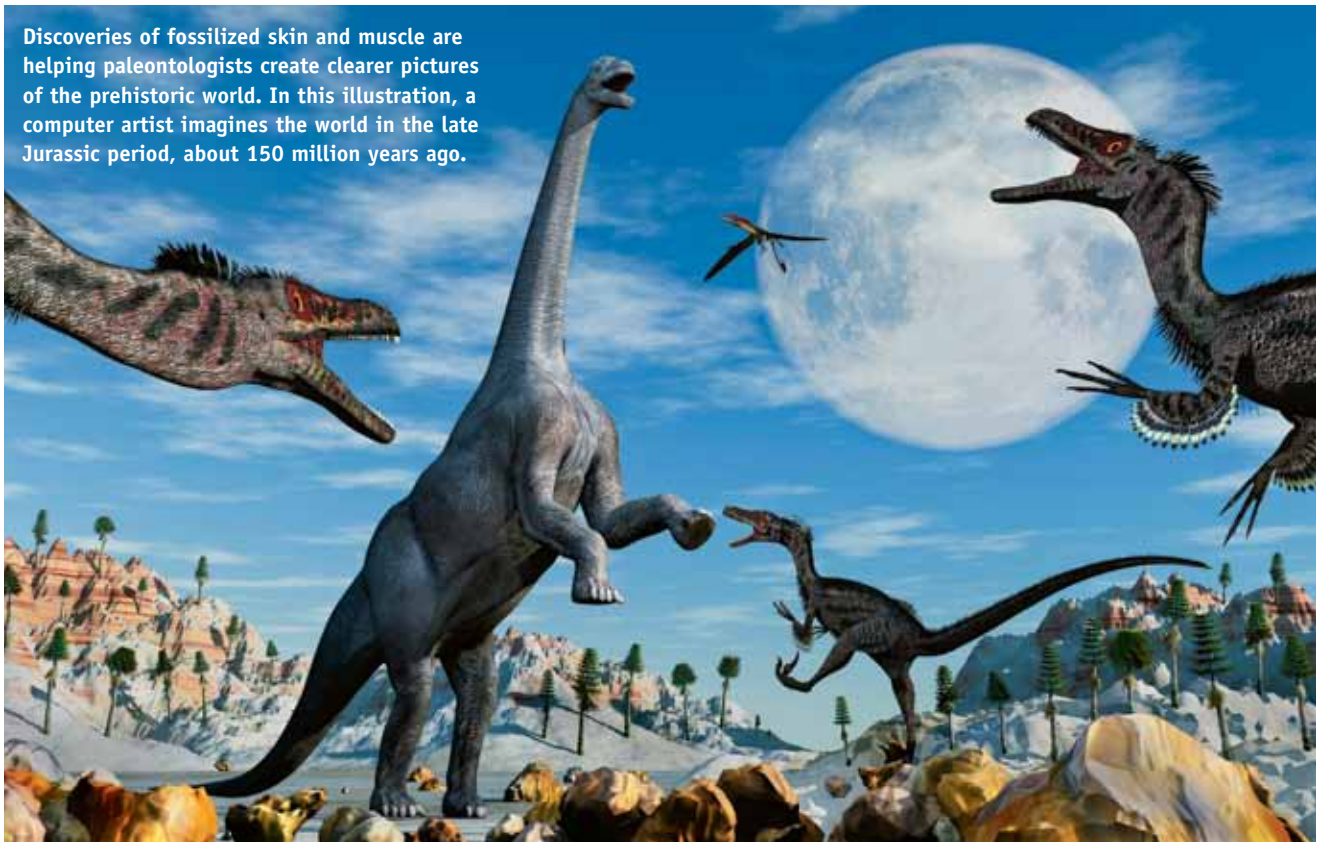
Mary resented this bitterly, but she remained proud and passionate about her work until

she died, at the age of 47.

Over the years, new discoveries have continued to add to our understanding of the prehistoric world. Today, scientists study fossils with 21st-century technology and are learning more about what prehistoric creatures looked like, how they behaved, and perhaps most important, why they disappeared. Most likely it was years of climate changes, volcanic eruptions, and, finally, a massive meteor strike, that caused the dinosaurs to die out some 66 million years ago.

What is clear is that we still have seen no more than a glimpse of the prehistoric world. Scientists believe we have identified barely 1 millionth of a

Discoveries of fossilized skin and muscle are helping paleontologists create clearer pictures of the prehistoric world. In this illustration, a computer artist imagines the world in the late Jurassic period, about 150 million years ago.



MARK STEVENSON/STOCKTREK IMAGES/CORBIS

Dinosaurs for Sale

Why some of today's important fossils will never be studied

By Georgia Jennings

It was one of the most important fossil finds in history: a perfectly preserved specimen of two dinosaurs, locked in battle. The fossil, nicknamed “The Dueling Dinosaurs,” was discovered in 2006 on a ranch in Montana. It was a rare find that had the potential to provide important new information about the prehistoric world.

But the fossil might never be studied by scientists.

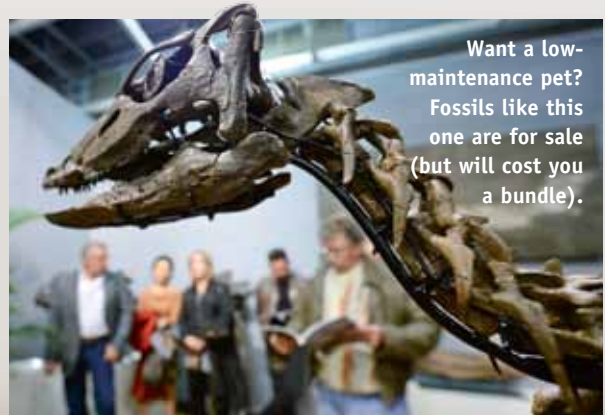
Today, many prized fossils are going not to museums but into the homes of wealthy fossil collectors who view these specimens like works of art, to be proudly displayed. One New York City banker shows off his 3-foot-long *Psittacosaurus* skeleton in his office. The beaked dinosaur is a huge hit with customers.

Once a fossil is in private hands, it is often lost forever to science. So why don't museums make sure to buy these specimens? Unfortunately, most museums simply can't afford them.

In recent years, the price of fossils has skyrocketed. At **auction** houses and fossil shows, dinosaur eggs, skulls, and skeletons can sell for hundreds of thousands of dollars. A *Tyrannosaurus* skull can sell for millions. And by law, a fossil found on private land is the property of the person who owns the land.

The Dueling Dinosaurs were discovered on the property of Mary Ann and Lige Murray, who are eager to earn as much as possible from their rare treasure, which some estimate to be worth between \$7 million and \$9 million.

So far nobody has offered that much, but the owners are in no rush. For now, the Dueling Dinosaurs are locked away—and so are the secrets they might reveal. ●



percent of the dinosaur species that lived in prehistoric times. Each new discovery—a **trove** of fossilized dinosaur eggs, a speck of fossilized dinosaur skin, the skull of a giant predator—creates

a more vivid picture of the world that Mary helped open for us. These discoveries also offer clues that can help us understand our world and, especially, our environment—the web that

connects all of Earth's creatures.

Perhaps at this very moment, a 12-year-old girl or boy is on a beach somewhere, about to make a discovery that will change our ideas yet again. ●

WRITING CONTEST

Imagine that you and your parents found a dinosaur fossil in your backyard. Write a letter to persuade them what to do with it. Support your argument with information from “The Girl Who Discovered the Dinosaurs” and “Dinosaurs for Sale.” Send your letter to **DINO CONTEST**. Five winners will get *Tim: Defender of the Earth* by Sam Enthoven.

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