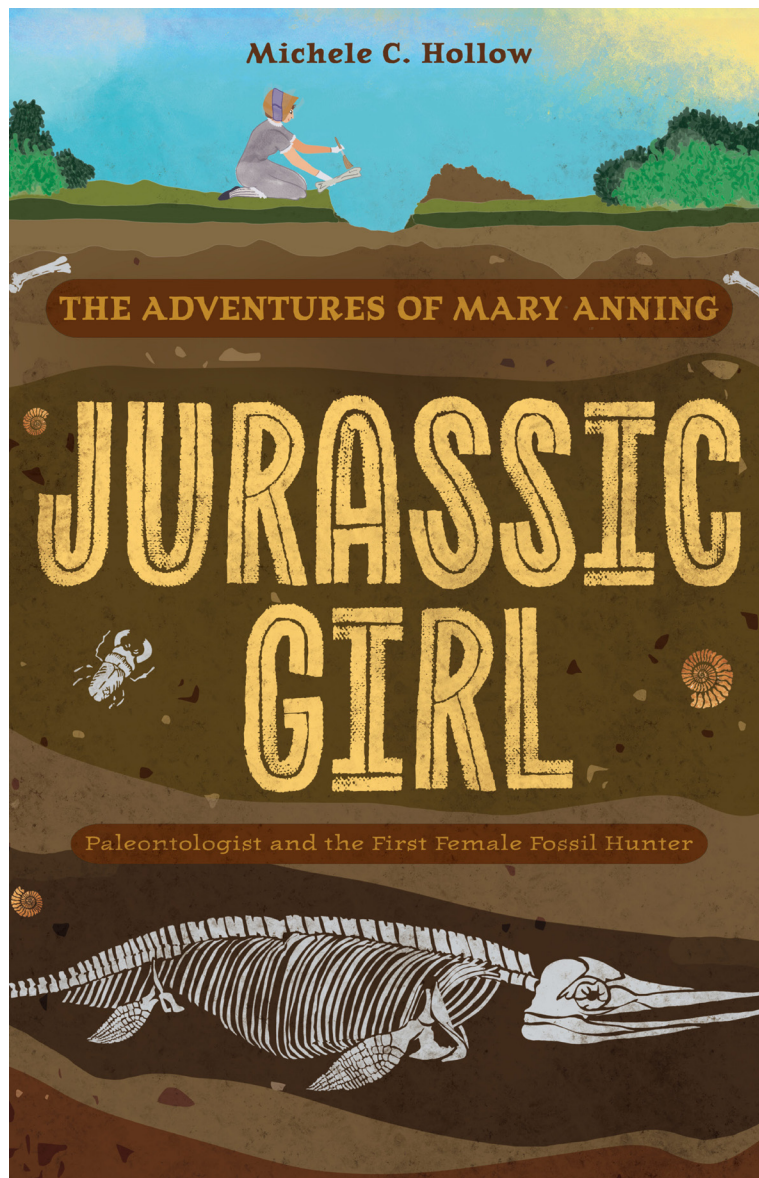


Study and Activity Guide for Middle Grades



About the Book

Mary Anning is one of the most famous persons you've probably never heard of. At age 12, she found the first ichthyosaurus, a lizard/fish-like creature from the Jurassic Period. It was more than 17 feet long. This was in the seaside town of Lyme Regis, England, in 1811, a time when most people thought extinction wasn't possible. The head of London's Geological Society called Mary a fraud.

According to many of the men in London's Geological Society, Mary had four strikes against her:

1. She was female.
2. She was 12 years old.
3. She had no formal education.
4. She was poor.

Mary believed the found objects that washed upon the shore and hidden among the rocky cliffs of her hometown led to clues of life long ago. Many of these creatures roamed the earth millions of years ago.



Mary spent most days on the beach filling up her basket with as many fossils as she could carry. Her ankle-length dress was tattered. Dirt collected under every fingernail, and sand found its way inside her boots. None of it bothered her because she relished the hunt.

Today, many people refer to her as the "Mother of Paleontology."

Check out the book's website:
jurassicgirl.com



About the Author

Michele C. Hollow works as a journalist writing about animals, health, mental health, and the environment. Her byline has appeared in The New York Times, New York Daily News, New Jersey Monitor, The Guardian, and Symphony Magazine. She's a member the Association of Health Care Journalists.

Working on science stories led her to Mary Anning. Her favorite parts of being a journalist are researching events, interviewing people, and understanding how things work.

Michele lives in New Jersey with her husband, Steven, their sons Tishon and Jordon, and their rescue cat Chai.

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VOCABULARY

Ammonites

The most common types of fossils are ammonites. Nicknamed “snakestones,” they resembled tightly coiled-up snakes that turned to stone. While they looked like snakes, they weren’t reptiles.

Cephalopod

(pronounced se-fe-le-pod) A cephalopod is an ancient species that exists today. Found in all of the world’s oceans, these creatures include octopuses, squids, cuttlefish, and nautilus. These animals lived in the oceans about 500 million years ago. They are incredibly intelligent.

Dinosaur

The word dinosaur didn’t exist until 1841. That’s when British scientist Sir Richard Owen coined the word; it translates to “terrible lizard.” Sauros is the Greek word for lizard. The Greek word deinos translates to terrible.

Paleontology

According to the Merriam-Webster dictionary, the word paleontology became somewhat popular in 1833.

Henri-Marie Ducrotay de Blainville, a prominent zoologist, used the word in 1821 when he published a study about the remains of plants and animals.

When Mary unearthed the ichthyosaurus in 1811, paleontology and paleontologists were not words. Those who studied fossils were geologists.



Geology

Geology was first used in 1735. Back then and today, geologists study the history of the earth as it relates to rocks; they also study the process of how those rocks change over time.

Fossil

Fossil comes from the Latin word “fossilis,” which means to “dig up.” It was first used in the early and mid 1600s.

Ichthyosaurus

The word is Greek and it translates to “fish lizard.”

Questions for Discussions:

1. Which is true? When Mary was a baby was she struck by lightning, almost drowned, or nearly killed by falling rocks?
2. What is a mollusk? Have you ever seen a mollusk? Can you name some common mollusks that people are familiar with today?
3. Why do you think some scientists believe that birds are the direct descendants of dinosaurs? What evidence do they have?
4. Mary found her fossil buried in the cliffs in Lyme Regis. Look at the picture of the beach to see the height of the cliffs. How did the fossil wind up in the cliffs?
5. Mary had a passion for fossil hunting. Would you share a hobby or interest you have a passion for with us? How did you get started? What do you enjoy? What have you learned and what keeps you involved?



Answers:

1. All are true. Lightning struck Mary at a festival. She almost drowned because she stayed on the beach when the weather changed and was pulled in by the waves. She also had near misses from falling rocks.
2. A mollusk is a marine animal that lives in shallow coastal areas and deep ocean waters. They range in size from microscopic to 45 feet and can weight up to 1650 pounds. Most mollusks are vegetarians. Cephalopods, a type of mollusk, are omnivores; they eat plants and other animals. Today we are familiar with gastropods like snails and bivalves like clams, mussels and oysters.
3. Look out the window or step outside. That pigeon or hawk you're looking at is really a living dinosaur! Every bird that survived the mass extinction when a giant asteroid hit the earth 66 million years ago evolved from a dinosaur. Dinosaurs had feathers. Some were soft and downy; others were bristle-like. They were small and adaptable, and they ate seeds, insects, and fish. Their small size allowed them to eat less than a larger animal. Many flew, which let them escape danger. This short and fun video explains the connection between dinosaurs and birds. <https://www.youtube.com/watch?v=0-7iXyYS0uw>
4. The sedimentary rock and the presence of ancient marine creatures tell us that the rock at the summit of Mount Everest was once underwater. It also tells us that something happened to bring that rock over 8,000 meters (26,200 feet) above sea level. The answer of course is plate tectonics. Plate tectonics is a process where pieces of the earth's outer shell move over and under each other pushing some pieces up and others down. Earth's thin outer shell is broken into big pieces called tectonic plates. These plates fit together like a puzzle, but they're not stuck in one place. They are floating on Earth's mantle, a really thick layer of hot flowing rock.

Write Your Own Story:

When Mary Anning found the ichthyosaurus, she wasn't sure what she discovered. Many in the scientific community thought it was a prehistoric crocodile. No one had ever seen an ichthyosaurus before. It was so foreign, some believed it was a hoax.

1. Imagine finding a creature today that you and most people never saw before. Write a short story about discovering something so unbelievable and try to convince others it's real.

2. Imagine discovering something new or doing something that others have not done or have never heard of. When you tell people about this new thing no one believes you. How would that make you feel. What if they called you a liar or a fraud? Write a story about your discovery or adventure and what you had to do to have the people around you believe you.

3. Life in Victorian England was very different from our lives today. Write a story about what your life would be like if the world had not changed and we didn't have our modern conveniences. What if technology changed, but the way people thought had not? What would your life be like?



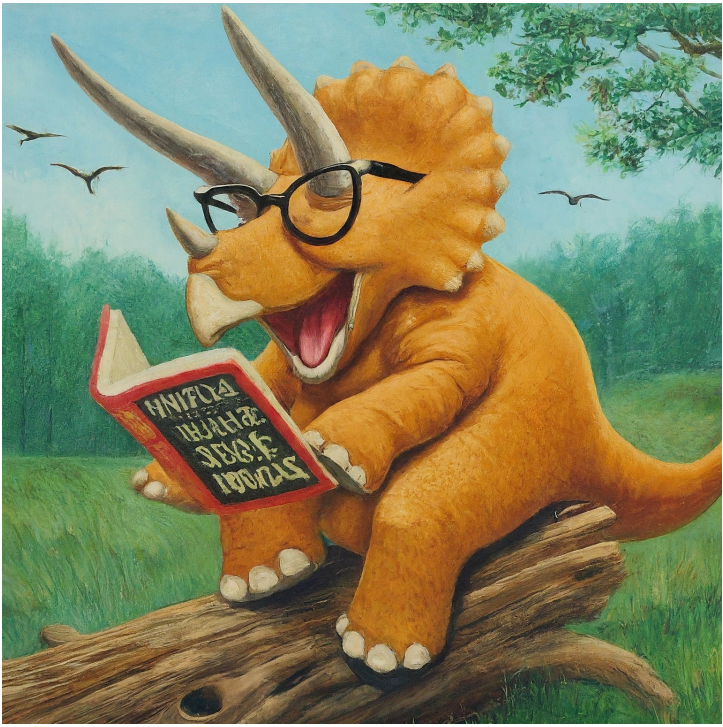
WRITE A HAIKU

A haiku consists of 17 syllables in three lines of 5, 7, and 5.
Here are three examples:

Mary Anning found
A big ichthyosaurus
Oh, surprised was she!

Fossils provide us
Distant echoes from our past
And much history.

Roaring dinosaur
Teaches us about the past
And we gain knowledge.



DINOSAUR JOKES

Why did Tyrannosaurus Rex cross the road?
Because chickens hadn't evolved yet.

What do you call a group of dinosaurs who sing?
A tyranno-chorus.

What do you call a dinosaur who is a noisy sleeper?
A Tyranno-snorus!

Which reindeer do dinosaurs want to avoid?
Comet!

Why didn't the dinosaur cross the road?
There weren't any roads back then.

Why did the pterodactyl fail the spelling test?
It put a P before every T.

What should you do if a dinosaur sneezes?
Get out of the way.

Now is your turn can you come up with a dinosaur or fossil joke?

DINOSAUR COOKIE RECIPE

You can make these at home from scratch or buy a premade cookie dough.

Ingredients:

You'll need a large plastic toy dinosaur for the footprints.
3 cups of all-purpose flour, plus more for rolling the dough
1 teaspoon of baking powder
1 teaspoon of kosher salt
2 sticks of butter, softened
1 cup of sugar
1 large egg
1 teaspoon of vanilla extract
1 tablespoon of milk (You can use oat, almond, or coconut milk.)

Directions:

1. In a large bowl, whisk together the flour, baking powder, and salt.
2. In a second large bowl, beat the butter and sugar until fluffy using a hand mixer or if you have a stand mixer, use that. Mix in the egg, milk, and vanilla. Once it's well mixed, add in the flour mixture a little at a time,
3. Roll small pieces of the dough into balls and place on a parchment lined baking sheet. Then stamp a dinosaur footprint onto each cookie using your plastic toy dinosaur.
4. Refrigerate the dough for an hour.
5. Preheat the oven to 350 degrees.
6. Place tray of cookie dough into the oven and bake for 15 to 17 minutes
7. Let cool and enjoy.

