

## *Prologue*

She sells sea-shells on the sea-shore  
The shells she sells are sea-shells, I'm sure  
For if she sells sea-shells on the sea-shore  
Then I'm sure she sells sea-shore shells.

—Tongue-twister written by Terry  
Sullivan in 1908 and inspired by Mary Anning

*P*re-Victorian England exemplified a powerful period in the history of science, a time when one never-before-seen monster after another was being cajoled from its Jurassic tomb, drawn out into the light of day where it could blow holes through the Biblical account of the earth's history. These creatures—with their bat-like wings, snake-like necks, and big, bulging eyes—vividly brought to life a prehistoric era that was more bizarre and harrowing than anyone had ever imagined. Indeed, they forever changed the way people thought about the world around them.

Today it is hard to relate to the mindset of people living in the early nineteenth century, decades before dinosaurs burst onto the scene. Without question, most people accepted the idea of an earth created in six divinely ordered twenty-four-hour time slots, in 4004 BC—a year derived at by meticulously tracing the biblical genealogies. After creating the sun, moon, stars, and oceans, God made creatures of the air, sea, and land on day five, followed by the appearance of the most magnificent and most complex creature—man—on day six. The land animals harmoniously shared the garden with Adam and Eve and all were vegetarian until the first couple sinned and thus began meat-eating and mortality. Later, during Noah's time, the global flood decimated all life except for that which had been corralled into his ark. Fossilized

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seashells found on mountaintops were proof positive of a deluge so great it swept up and over everything in its path.

In the early 1800s, most people had absolute faith in the fact that species never changed or evolved, or became extinct. Everything that existed had always existed. The world was pretty simple, really. There wasn't any radioactivity or relativity, extinction or evolution, to muddle things up. It was during this time that a young working-class English girl named Mary Anning began raising eyebrows with her daily forays along the dangerously crumbling strata of England's southern coastline, decked out in voluminous tattered skirts as she ran the gauntlet of high tides and landslides. Always she was on a hunt for curiosities she could sell to seafaring tourists in order to put food on her table.

By birthright, Mary should never have grown up to be a famous fossil hunter and geologist. In addition to being dirt poor, Mary Anning also was marginalized by odds clearly not stacked in her favor: her sex, regional dialect, lack of formal education, and adherence to the Dissenter faith, a religious strain that didn't conform to the teachings of the established Church of England.

But she enjoyed one powerhouse advantage: the very good fortune of having been born in exactly the right place at the right time, in 1799 in an unassuming English town called Lyme Regis alongside some of the most geologically unstable coastline in the world. Unbeknownst to anyone at the time, its wobbly cliffs held the remains of a baffling array of ancient reptiles, reptiles that used to roam the land and inhabit the seas hundreds of millions of years in the past.



I first discovered Mary Anning a few years ago during a vacation to England's so-called Jurassic Coast with my husband and three children. My ten-year-old son Ben is quite the budding geologist who likes nothing more than to wait for low tide, then scramble out across the shore below vertical, yet slumping, cliffs, hoping to chance upon an ammonite in a grayish stone streaked with quartz. During

## PROLOGUE

our brief trip, we paid a visit to the small Lyme Regis Philpot Museum where, tucked away on the second floor, was a permanent exhibit designed to preserve the legacy of a woman I'd never heard of—Mary Anning.

It wasn't so much Mary's fossil finds that intrigued me, but rather it was how this low-ranking woman had managed to make an indelible mark in such a male-dominated field. I was bowled over by how, in 1823, she successfully challenged Georges Cuvier—perhaps the most influential figure in science at the time—following her discovery of a plesiosaur. But most remarkable of all was that almost no one I knew had ever heard of Mary Anning—even among my British friends. And this was a woman London's Natural History Museum refers to on its website as the “greatest fossil hunter ever known.”

Not only were Mary Anning's finds extraordinary, but so too was the fact that she was out of step with her times, a rebel who carved out her own niche in a highly stratified and sexist society. All around her were learned men who were trying to reconcile the gap between religious beliefs and scientific evidence—and they were using her fossil finds to do it. Indeed it was Mary's spectacular marine reptiles that pushed them into finally contemplating a different explanation for the world's origin.

Mary's many finds also laid the groundwork for Charles Darwin's theory of evolution, elucidated in his 1859 *On the Origin of Species*. Darwin drew on Mary's fossilized creatures as irrefutable evidence that life in the past was nothing like life in the present.

Mary was deeply pious and—like Darwin—she most likely was unsettled by what she was unearthing. She couldn't have possibly imagined where her finds would take her, and eventually Darwin, and the rest of the world. Always, though, she maintained a belief in God's omnipotence. Most amazingly, this girl, with dirt under every fingernail, with barely a shilling to buy vegetables, grew up with so much confidence that in 1844 she was able to brazenly tell the King of Saxony's entourage: “I am well known throughout the whole of Europe.”

Here is her story.