

MARY ANNING, FOSSIL HUNTER

with

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Despite the fact that Mary Anning's life has been made the subject of several books and articles, comparatively little is known about her life, and many people are unaware of her contributions to paleontology in its early days as a scientific discipline. How can someone described as 'the greatest fossilist the world ever knew' be so obscure that even many paleontologists are not aware of her contribution? She was a woman in a man's England.

Mary Anning was born in 1799 to Richard and Mary Anning of Lyme Regis, situated on the southern shores of Great Britain. The cliffs at Lyme Regis were--and still are-- rich in spectacular fossils from the seas of the Jurassic period. Richard and Mary had as many as ten children, but only two of these children, Mary and Joseph, reached maturity. Richard was a cabinetmaker and occasional fossil collector. Unfortunately, Richard died in 1810, leaving his family in debt without a provider. He did, however, pass on his fossil hunting skills to his wife and children, which later proved fortuitous for the fledgling field of paleontology.

The Anning family lived in poverty and anonymity, selling fossils from Lyme Regis, until the early 1820s, when the professional fossil collector Lt.-Col. Thomas Birch came to know

the family and sympathized with their desperate financial situation. Birch decided to hold an auction to sell off all of his fine fossil collection and donate the proceeds to the Anning family. He felt that the Annings should not live in such "considerable difficulty" considering that they have "found almost all the fine things, which have been submitted to scientific investigation...". Up to this point mother Mary was running the business end of fossil collecting. By the middle of the 1820s, daughter Mary had established herself as the keen eye and accomplished anatomist of the family, and began taking charge of the family fossil business. Joseph was, by this time, committed to a career in the upholstery business, and no longer collected fossils.

Mary Anning has been credited with the first discovery of ichthyosaur fossils. Although this is not entirely true, she did help to discover the first specimen of *Ichthyosaurus* to be known by the scientific community of London. This specimen was probably discovered sometime between 1809 and 1811, when Mary was only 10 to 12 years old. And while Mary did find the majority of the remains, her brother had discovered part of the beast twelve months earlier. In fact, the entire Anning family was involved in fossil hunting, but Mary's skill and dedication produced many remarkable finds and thus provided the fatherless family with a means of income. The fossils that Mary and her family found and prepared were eagerly sought -- not only by museums and scientists, but by European nobles, many of whom had substantial private collections of fossils and other "curiosities."

Mary made many great discoveries, including the aforementioned ichthyosaur and several other fine ichthyosaur skeletons. But perhaps her most important find, from a scientific point of view, was her discovery of the first plesiosaur. The famous French anatomist, Georges Cuvier, doubted the validity of the specimen when he first examined a detailed drawing. Once Cuvier realized that this was a genuine find, the Annings became legitimate and respected fossilists in the eyes of the scientific community.

Despite this recognition, the majority of Mary's finds ended up in museums and personal collections without credit being given to her as the discoverer of the fossils. As time passed, Mary Anning and her family were forgotten by the scientific community and most historians, due to the lack of appropriate documentation of her special skills. Contributing to the oversight of Mary Anning and her contribution to paleontology was her social status and her gender. Many scientists of the day could not believe that a young woman from such a deprived background could possess the knowledge and skills that she seemed to display. For example, in 1824, Lady Harriet Sivester, the widow of the former Recorder of the City of London, wrote in her diary after visiting Mary Anning:

"... the extraordinary thing in this young woman is that she has made herself so thoroughly acquainted with the science that the moment she finds any bones she knows to what tribe they belong. She fixes the bones on a frame with cement and then makes drawings and has them engraved. . . It is certainly a wonderful instance of divine favour - that this poor, ignorant girl should be so blessed, for by reading and application she has arrived to that degree of knowledge as to be in the habit of writing and talking with professors and other clever men on the subject, and they all acknowledge that she understands more of the science than anyone else in this kingdom."

Lady Sivester's praise is high, but note that "divine favour" is invoked to explain how such a woman could possibly be so knowledgeable. It is clear, however, that Anning was not only a

collector, but was well-versed in the scientific understanding of what she collected, and won the respect of the scientists of her time. Her discoveries were important in reconstructing the world's past and the history of its life.

© <https://ucmp.berkeley.edu/history/anning.html>. This biography was inspired by Hugh Torrens of the Department of Geology, Keele University, Staffordshire, UK. For a much more detailed account of the history of Mary Anning and Lyme Regis, read Dr. Torrens' "Presidential Address: Mary Anning (1799-1847) of Lyme; 'the greatest fossilist the world ever knew'" *British Journal of the History of Science*, 1995, vol. 28, pp. 257-284.



Detail of a portrait of Mary Anning by an unknown artist, before 1842

Mary Anning: the unsung hero of fossil discovery

By Marie-Claire Eylott

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Mary Anning was a pioneering paleontologist and fossil collector. Her lifetime was a constellation of firsts. Mary Anning was born in 1799 in Lyme Regis, in the southwest English county of Dorset. Lyme Regis is now part of what is now called the Jurassic Coast, and discoveries are still being made to this day. While Mary was growing up, George III was king, the war between the British and Napoleon's French army was raging on and Jane Austen had written *Sense and Sensibility*.

Rough start in life

The Anning family were religious dissenters - Protestants who separated from the Church of England - and very poor. Out of nine or ten children, only Mary and her older brother, Joseph, survived to adulthood.

Mary's father, Richard, was a cabinetmaker and amateur fossil collector. By the time she was five or six, Mary was his fossil-collecting sidekick - an otherwise unfathomable activity for Georgian girls.

Richard taught his daughter how to look for and clean the fossils they found on the beach, and often displayed and sold them from his shop.



Mary Anning and her loyal companion, Tray

Like many women and girls in Lyme Regis at the time, Mary had little formal education. She was able to read, however, and taught herself geology and anatomy.

Richard died suddenly in 1810, from tuberculosis and previous injuries. Joseph took up a post as apprentice upholsterer and their mother, Molly, encouraged Mary to help pay off the family's debts by selling her finds.



One of Mary's detailed sketches

Source of curiosities

Lyme Regis is especially rich in ammonites (which were then called 'Ammon's horn') as well as belemnites ('devil's fingers').

During the Napoleonic Wars, civilians were encouraged to holiday near home rather than abroad, so tourists flocked to seaside towns such as Lyme Regis.

Around this time fossil hunting was also gaining traction. This pastime was perfect for fashionable Georgians seeking to add to their cabinets of curiosities.



*A specimen of *Ichthyosaurus communis* that was discovered by Mary Anning*

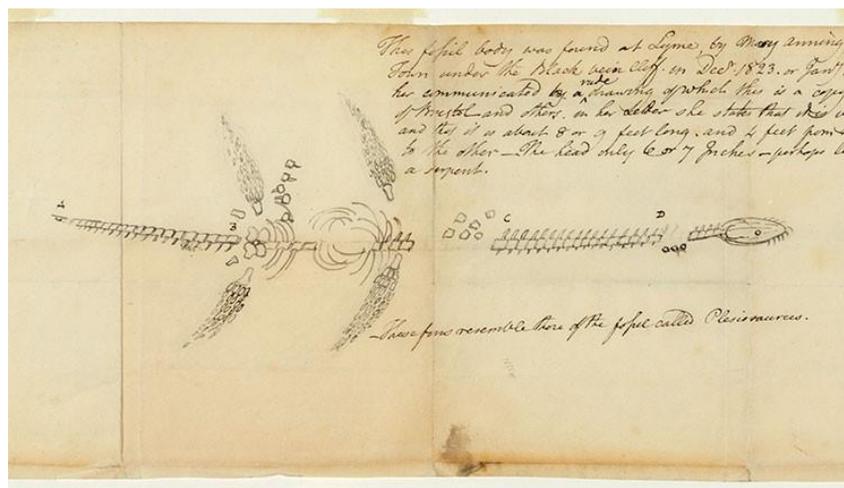
First ichthyosaur

Around 1811, when Mary was 12, Joseph found a strange-looking fossilised skull. Mary then searched for and painstakingly dug the outline of its 5.2-metre-long skeleton. By the time she was done, several months later, everyone in town knew she had discovered what must have been a monster.

Scientists thought this was a crocodile. At the time most people assumed that unearthed, unrecognisable creatures had simply migrated to far-off lands.

By this time, Georges Cuvier, known as the father of paleontology, had only recently introduced the theory of extinction. Charles Darwin's *On the Origin of Species* would not be published for another 48 years.

The mysterious specimen was studied and debated for years. It was eventually named *Ichthyosaurus*, or 'fish lizard' - though we now know it was neither fish nor lizard, but a marine reptile. It lived 201-194 million years ago.



Mary Anning's sketch of her first plesiosaur

Controversial find

In 1823 Mary was the first to discover the complete skeleton of a *Plesiosaurus*, meaning 'near to reptile'. So strange was the specimen and so quickly had the news spread that soon there were rumours that the fossil was a fake.

Georges Cuvier himself disputed the find. A special meeting was scheduled at the Geological Society of London, though Mary was not invited. After lengthy debate, Cuvier admitted to his mistake.

Despite her growing reputation for finding and identifying fossils, the scientific community was hesitant to recognise her work.

Male scientists - who frequently bought the fossils Mary would uncover, clean, prepare and identify - often did not credit her discoveries in their scientific papers on the finds, even when writing about her groundbreaking ichthyosaur find.

Even the Geological Society of London refused to admit her - in fact, they didn't admit women until 1904.



Mary's first pterosaur

Winged creature

In 1828 Mary uncovered a strange jumble of bones, this time with a long tail - and wings. Once again, news of her discovery travelled fast. Scientists from London to Paris theorised on this 'unknown species of that most rare and curious of all reptiles'.

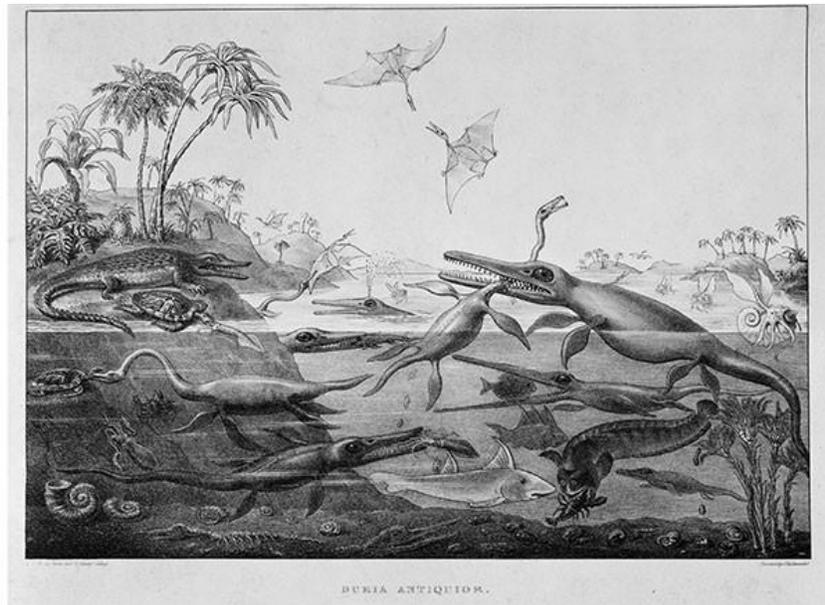
What she found were the first remains attributed to a *Dimorphodon*. It was the first pterosaur ever discovered outside Germany. The name *Pterodactyl* was coined later.

Unlike ichthyosaurs and plesiosaurs, pterosaurs had wings and were believed to be the largest-ever flying animals.

Another of Mary's contributions to science, though arguably less glamorous, is that she pioneered the study of coprolites - or fossilised poo.

Sparking public interest

Mary continued to unearth fossil after fossil. She still sold her many finds, which increasingly fuelled public interest in geology and paleontology. People flocked to fossil displays around the country - even major museums struggled to keep up with demand.



Duria Antiquior Henry de la Beche, 1830.
The first major example of paleoart

Her discoveries inspired famous geologist (and childhood friend) Henry De la Beche to paint '*Duria Antiquior* - A More Ancient Dorset' in 1830. He sold prints to raise money for Mary, who was still struggling to make ends meet. *Duria Antiquior* - complete with ichthyosaur, plesiosaur and pterosaur - is the very first pictorial representation of prehistoric life based on fossil evidence. This art form is now known as **paleoart**. It helps people understand a little about life on Earth millions of years ago. Paleoart is still popular today, from meticulous renderings used for research to dinosaur t-shirts. Mary's *Plesiosaurus* also inspired geologist Thomas Hawkins's *Book of the Great Sea Dragons*, published in 1840.



Book of the Great Sea Dragons

Mary Anning's legacy

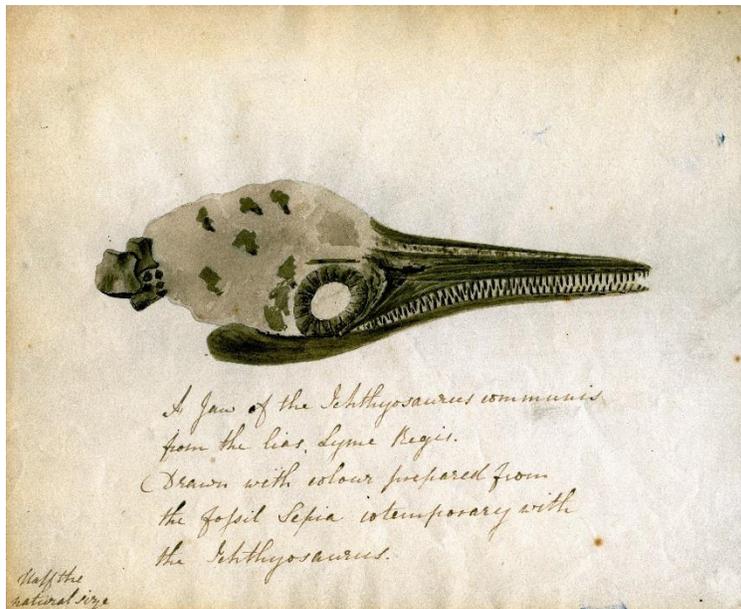
Mary died from breast cancer in 1847. She was only 47 years old, and still in financial strain despite a lifetime of extraordinary scientific discoveries.

Today the Natural History Museum in London showcases several of Mary Anning's spectacular finds, including her ichthyosaur, plesiosaur and pterosaur. Much like they did two centuries ago, her fossils continue to captivate visitors from around the world.



Museum scientists in Lyme Regis, 2003

And Mary's legacy lives on along the rugged Jurassic Coast - now a UNESCO World Heritage Site - where scientists, amateurs and adventurous children alike gather year-round to hunt for the next big find.



Sketch of Ichthyosaurus by Anning in her field notebook