

# Mary Anning display

## Bizzell Library 5th floor, History of Science Collections

### August 2022 - May 2023

*Curated by Aja Tolman and Kerry Magruder, with special thanks to Tom Sharpe.*

The first half of the 19th century is sometimes known as the “Golden Era” of geology. At that time, no one in Great Britain made more important fossil discoveries than Mary Anning (1799-1847), a working class woman who lived in the town of Lyme Regis in Dorset.

Mary Anning brought to life the lost world of the marine fossils found along the shore. In 2001 UNESCO designated the Dorset shore in southern England as the Jurassic Coast World Heritage Site. There Anning recovered and expertly reconstructed the remains of ichthyosaurs, plesiosaurs, pterosaurs, ammonites and other fossil animals which she made known around the world.



*“This lady, devoting herself to science, explored the frowning and precipitous cliffs there, when the furious spring-tide conspired with the howling tempest to overthrow them, and rescued from the gaping ocean, sometimes at the peril of her life, the few specimens which originated all the fact and ingenious theories...”*

— Thomas Hawkins, *Memoirs of Ichthyosauri and Plesiosauri* (London, 1834)

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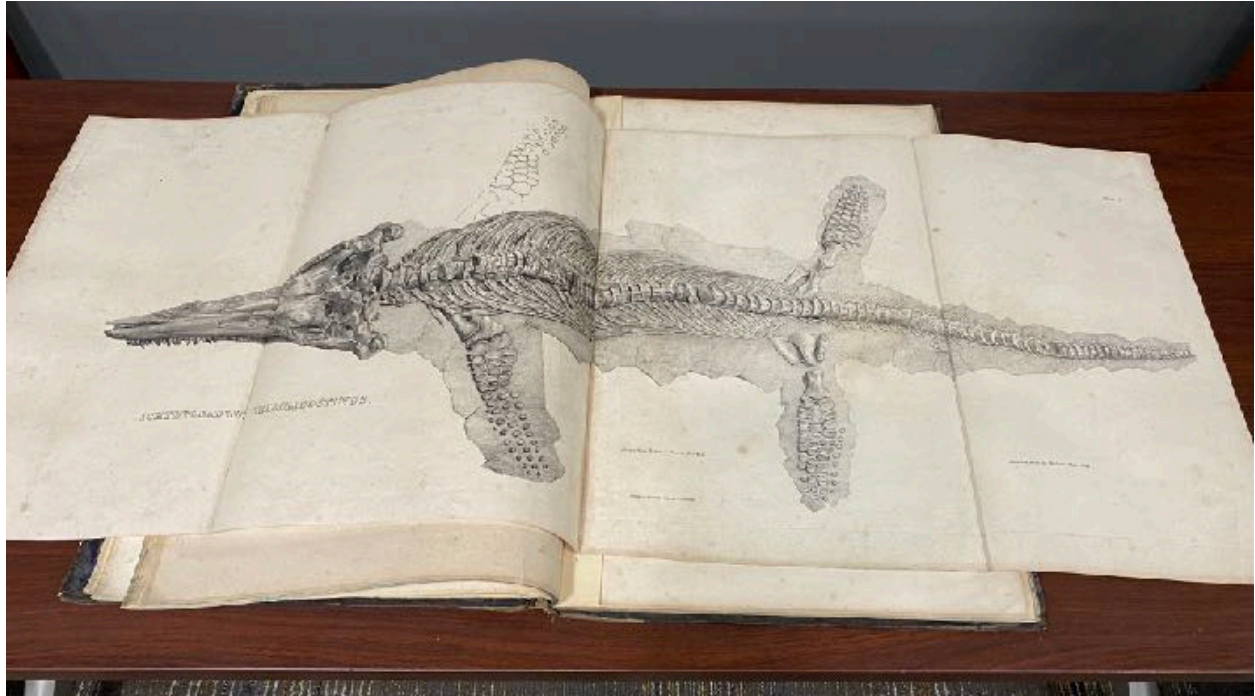
## Thomas Hawkins, Ichthyosaur and Plesiosaur (main floor)

On the main floor, view the Mary Anning exhibit, soaking in the large graphics and specimens on loan from the Sam Noble Museum. The main floor exhibit features two books from the History of Science Collections:

1. Thomas Hawkins, *The Book of the Great Sea-Dragons, Ichthyosauri and Plesiosauri* (London, 1840)

Source: Hugh S. Torrens Collection, History of Science Collections.

Open to fold-out plate of Ichthyosaur:



Discovery of the ichthyosaur heralded the recovery of a lost Age of Reptiles which the great French comparative anatomist George Cuvier surmised might have existed before the Age of Mammals. In 1811, in the shoreline cliffs of Lyme Regis, Mary Anning's older brother, Joseph, excavated a remarkable four-foot long fossil skull resembling a prehistoric crocodile. Mary found the rest of the huge skeleton the following year, which eventually ended up in the British Natural History Museum. The strange creature, neither crocodile nor fish, in 1817 was named an *Ichthyosaurus* ("fish-lizard") by Museum Keeper Charles Konig on the basis of the Anning specimen. Thereafter, the finest ichthyosaur specimens continued to come from Lyme Regis.

Thomas Hawkins made the fossils of the Jurassic coast more widely known. Mary Anning discovered the specimen illustrated in this plate in July 1832. She sold part of the skull to Hawkins, an eccentric collector who had just arrived in Lyme. Against her advice, he then organized a major excavation of the cliff to retrieve the rest of the skeleton. Hawkins had the money to pay for an army of laborers; Anning did not.

In a stunning large format, this book features 30 plates of ichthyosaurs and plesiosaurs. Hawkins gave Mary Anning credit for the fossils and acknowledged her expertise. However, his

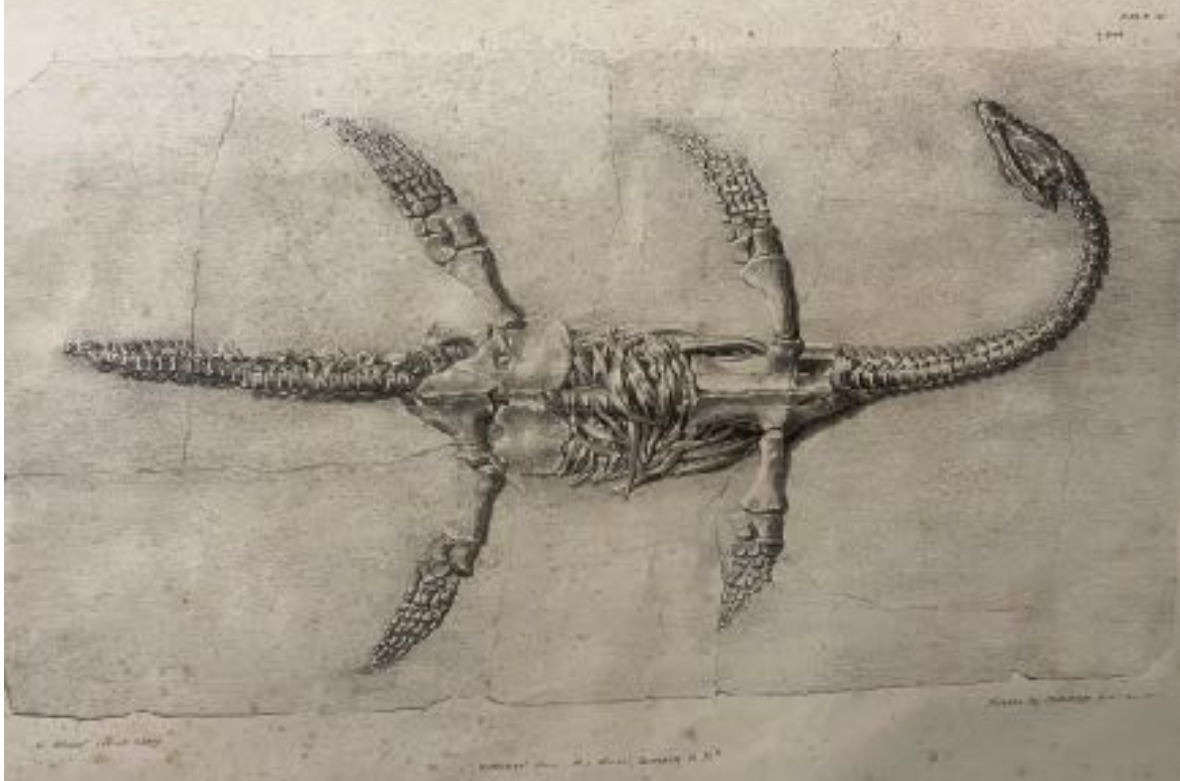


fossil reconstructions introduced errors of representation because he did not always follow her advice.

Source: Hugh S. Torrens Collection, History of Science Collections, University of Oklahoma Libraries.

2. Thomas Hawkins, *Memoirs of Ichthyosauri and Plesiosauri* (London, 1834)

Open to Plesiosaur:



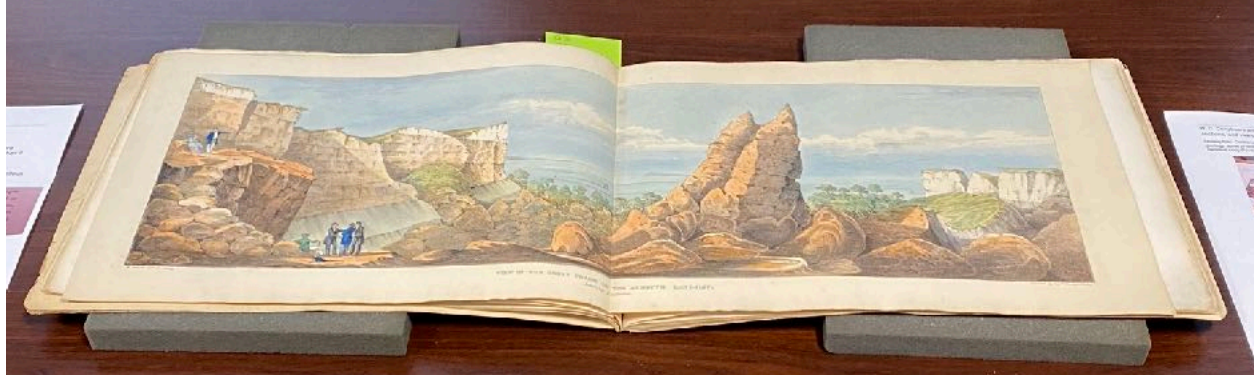
- In a stunning large format, like *The Book of the Great Sea Dragons*, this book features 28 plates of ichthyosaurs and plesiosaurs. The OU copy has manuscript annotations.

Now take the elevator to the 5th floor to see the remaining original books and items on exhibit.

## Conybeare, landslips (east wall)

“View in the Great Chasm of the Axmouth Landslip, Looking Eastward,” W. D. Conybeare and William Dawson, *Ten Plates comprising a plan, sections, and views* (London, 1840)

Open to: “View in the Great Chasm of the Axmouth Landslip, Looking Eastward”



Fossil collecting was dangerous work. Storms eroded shoreline cliffs, exposing new fossils to the collector but also threatening further falls. With 12 spectacular colored lithographs, this book illustrates landslips to the west of Lyme Regis. Although Mary Anning's fossils were collected on the cliffs east of Lyme Regis, she accompanied William Conybeare and William and Mary Buckland when they visited the site of the Bindon landslip which occurred on Christmas Day, 1839. Some of the lithographs in this volume are based on drawings made by Mary Buckland.

Source: Hugh S. Torrens Collection, History of Science Collections.

## Conybeare, Plesiosaur (east wall)



### Left item

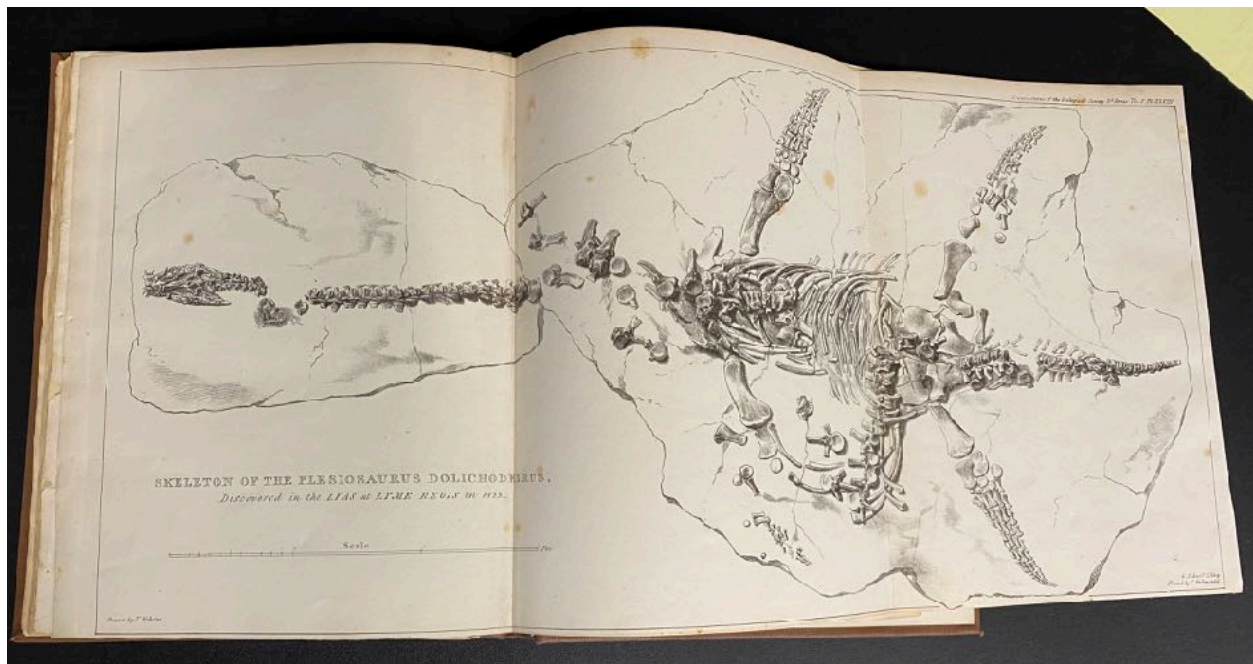
W. D. Conybeare, "On the Discovery of an almost perfect Skeleton of the Plesiosaurus," *Transactions of the Geological Society of London* (London, 1824), Second Series, vol. 1, pp. 381-389.

Open to: p. 382

Mary Anning discovered the first nearly-complete plesiosaur fossils. Plesiosaurs were a quite different animal than ichthyosaurs.

The head of one almost-perfect plesiosaur specimen, Conybeare writes in this memoir, was "*remarkably small*" compared to the Ichthyosaur. The long length of the neck formed "*the most prominent and interesting feature*" of the discovery and "*renders this animal one of the most curious and important additions which geology has yet made to comparative anatomy.*"

Source: History of Science Collections.



## Right item

W. D. Conybeare, "Skeleton of the Plesiosaurus Dolichodeirus, Discovered in the Lias at Lyme Regis in 1823," *Transactions of the Geological Society of London* (London, 1824), Second Series, vol. 1, Plate XLVIII. Lithograph by Thomas Webster.

Open to: Plate XLVIII

When Georges Cuvier in Paris heard news of the plesiosaur, he at first attributed it to the accidental juxtaposition of bones from two different kinds of animals, until Buckland and others provided further attestation. After receiving sufficient assurances that the fossil had been excavated and assembled correctly, Cuvier held Mary Anning and her expertise in high regard, citing her in later works.

A few days after the meeting in which Conybeare's paper was read, Buckland wrote his friend in Oxford that it was "by far the most crowded Meeting of the Society I ever Witnessed."

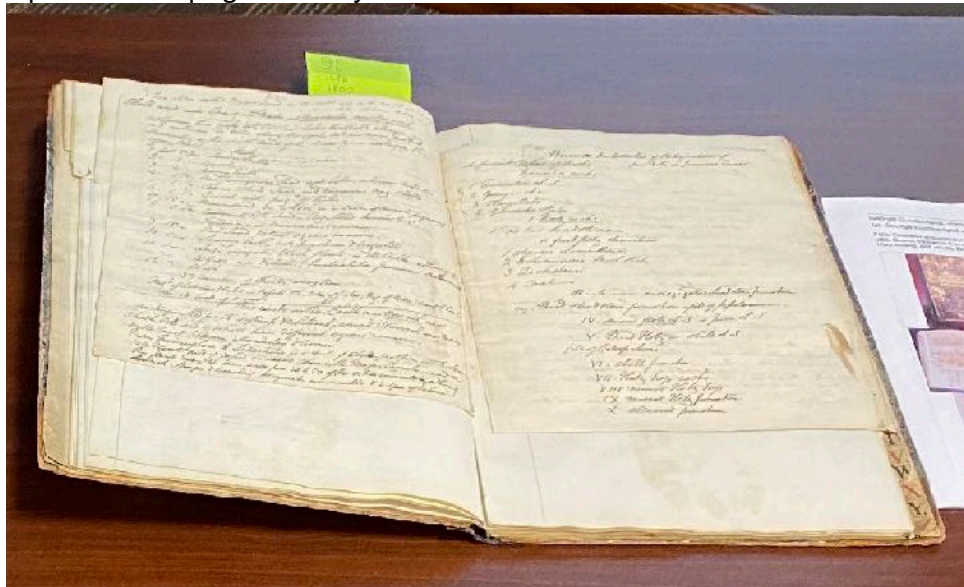
Source: History of Science Collections.



## Cumberland, Miller, Crinoids (east wall)

### 1. George Cumberland, Bound manuscript notes and drawings.

Open to: turn page monthly



George Cumberland was a well-known poet and patron of the arts who moved to Bristol in 1807. These extensive manuscripts include several sketches of fossils and other notes on geology bound together in a single volume. Cumberland describes the strata of William Smith and lists Mary Anning among his contacts for fossils in Lyme Regis.

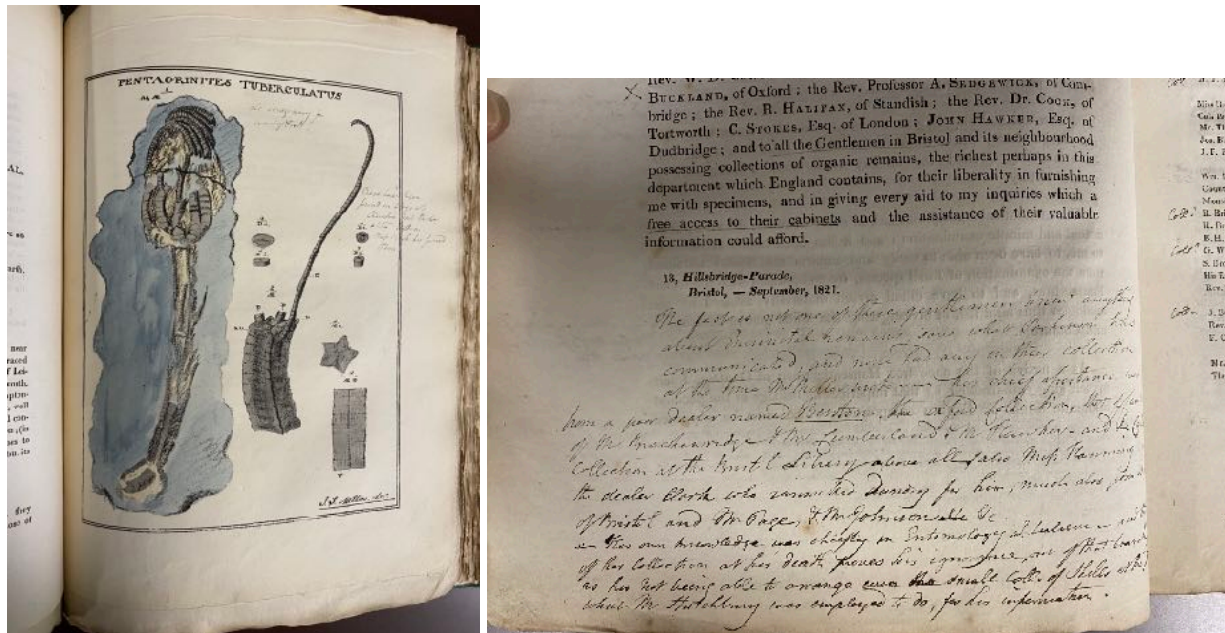
In the *Bristol Mirror* for January 11, 1823, Cumberland wrote:

*"This persevering female has for years gone daily in search of fossil remains of importance at every tide, for many miles under the hanging cliffs at Lyme, whose fallen masses are her immediate object, as they alone contain these valuable relics of a former world, which must be snatched at the moment of their fall, at the continual risk of being crushed by the half suspended fragments they leave behind, or be left to be destroyed by the returning tide – to her exertions we owe nearly all the fine specimens of Ichthyosauri of the great collections..."*

Source: Hugh S. Torrens Collection, History of Science Collections.

## 2. John S. Miller, *Natural History of the Crinoidea* (Bristol, 1821)

Open to: VIII of the preface



This study of crinoid fossils features beautiful watercolor drawings drawn by the author, John Miller, Curator of the Bristol Institution for the Advancement of Science and Art. Miller corresponded with Anning and acquired fossil specimens from Lyme Regis for the museum. Miller presented one copy of his book to Anning. George Cumberland owned this copy. It contains extensive manuscript notes throughout, some mentioning Anning ("Hanning").

Source: Hugh S. Torrens Collection, History of Science Collections.



## Maps of Dorset coast, and William Smith (flat display case)

### 1. William Smith, *A Delineation of the Strata of England and Wales* (London, 1815)

Open to: Plate XI



William Smith, a working-class surveyor and engineer, demonstrated that fossils were the key to unravelling the order of strata. Plate XI shows the location of Lyme Regis in Dorset. Smith described the strata in which Anning found fossils, particularly the Lias formation which was exposed along the Dorset coast.

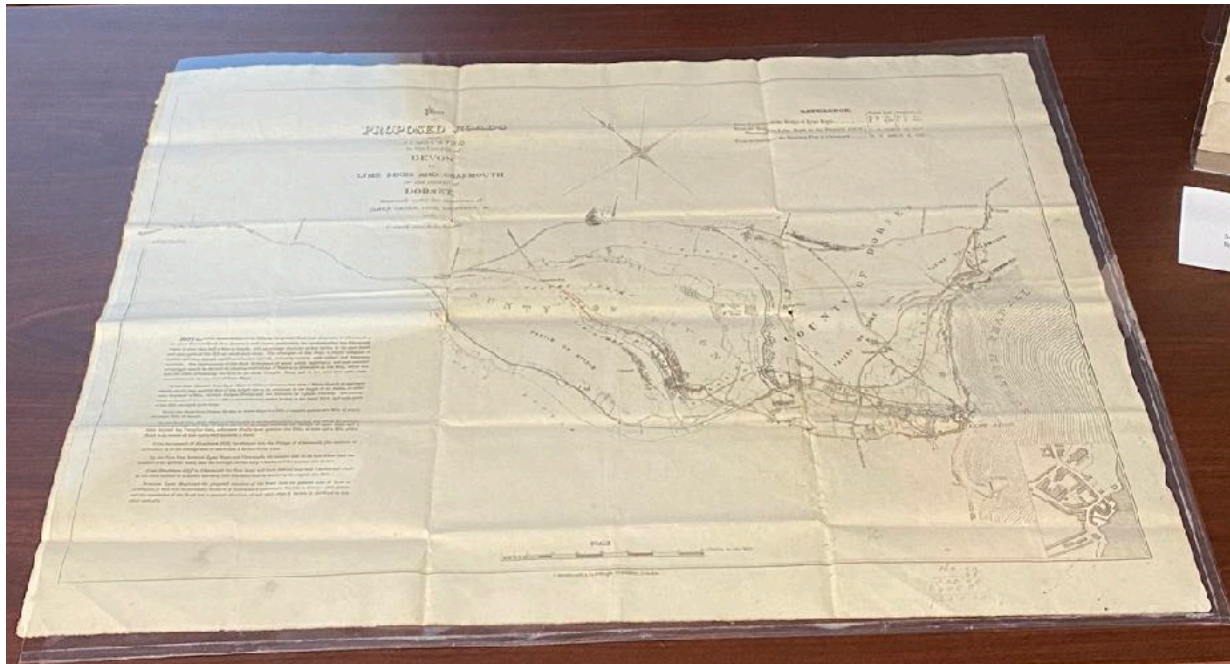
Smith's map consists of 15 large hand-colored sheets which cover all of England and Wales in astonishing detail. The individual sheets measure 20.5 x 23.6 inches. They may be bound as an atlas or assembled together for mounting on a wall; the latter would create a mural about 8.5 feet tall and nearly 6 feet wide. For more than two centuries, Smith's map has been displayed as a mural on a wall at the Geological Society of London. The OU copy, bound as an atlas, contains additional works by Smith.

Source: History of Science Collections.

2. Map of Dorset coast. *Plan of Proposed Roads from Axminster in the County of Devon to Lyme Regis and Charmouth in the County of Dorset, Surveyed under the direction of James Green, Civil Engineer* (London, 1822).

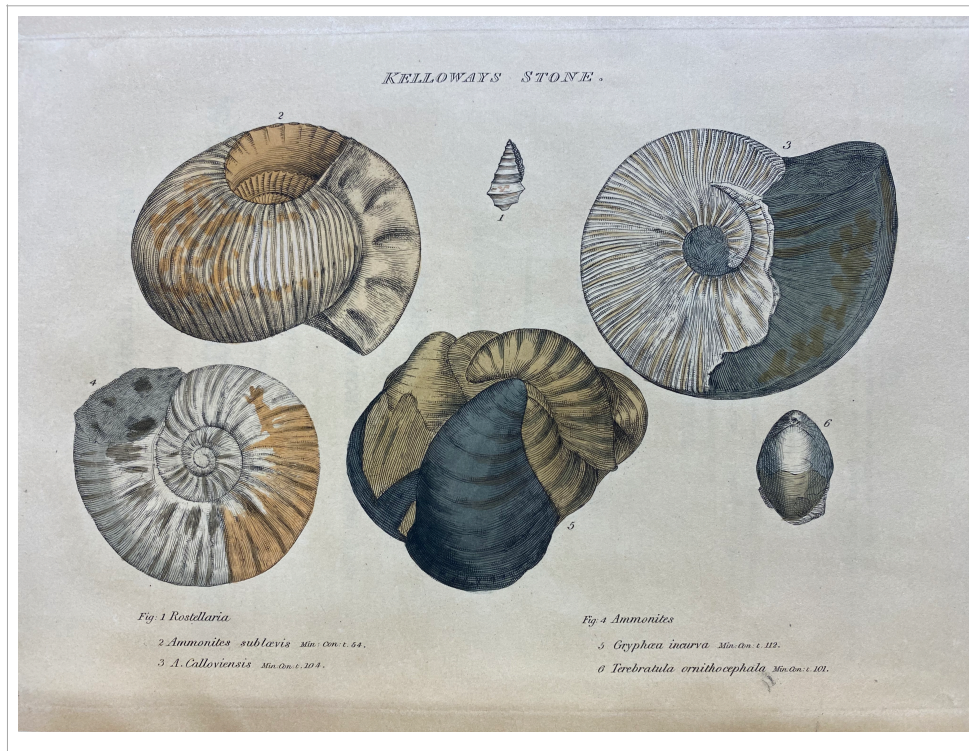
Mary Anning would take along her little dog as she swept the coast for fossils. Storms would expose new fossils she might collect, excavate, reconstruct, sketch, describe, and sell. However, the treacherous cliffs and fierce storms of the Dorset coast were also very dangerous. Sadly, the dog perished due to a landslide that nearly buried Anning too. Shortly after, Anning wrote Charlotte Murchison that the cliff “fell upon him and killed him in a moment before my eyes, and close to my feet... it was but a moment between me and the same fate.”

Source: “Henley, 1790-1860, 1960-2020,” Hugh S. Torrens Archive, History of Science Collections.





3. William Smith, *Strata identified by organized fossils* (London, 1816).



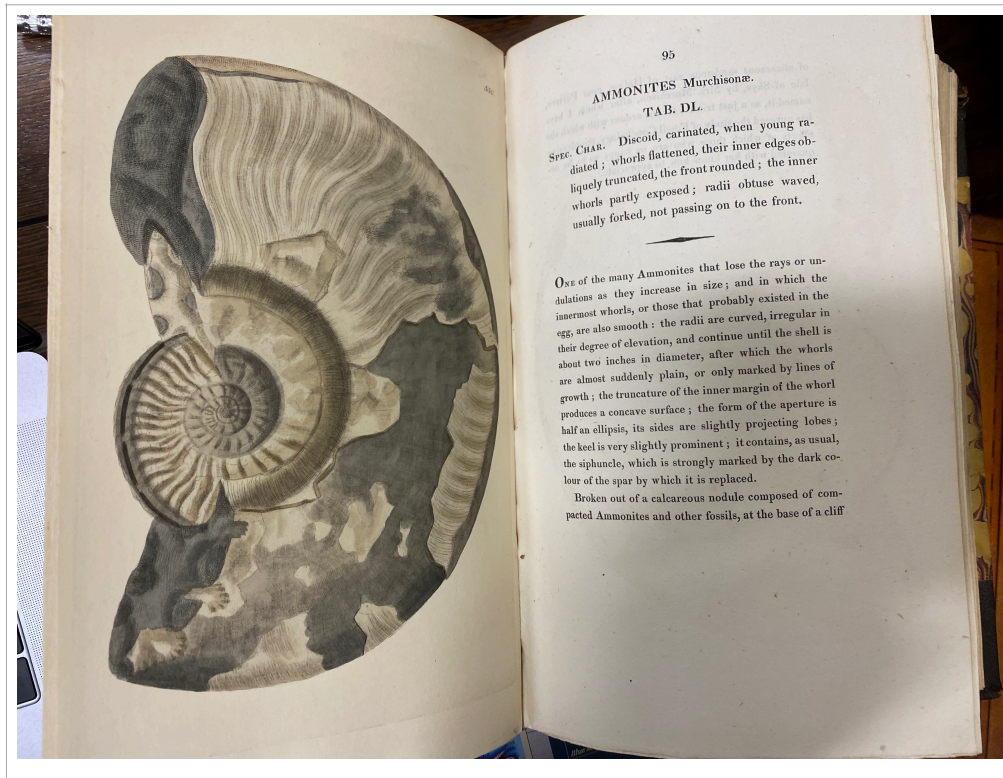
Open to: Kelloways Stone.

This book contains two works by William Smith bound together. In *Strata identified by organized fossils* (1816), Smith explained how the strata depicted on his geological map could be identified by the characteristic fossil assemblages they contained. For example, several species of ammonites are characteristic fossils of Kelloways Stone, a stratum which clearly divides the boundaries of clay strata which lie above and below it (now known as the Kelloways Formation). In *A Stratigraphical system of organized fossils* (1817), Smith described each stratum in more detail, noting where it might be found and its practical uses — for example, Kelloways Stone makes high-quality bricks.

This volume contains hand-written annotations by Smith, identified by Hugh Torrens, which incorporate additional strata and make several revisions in species names and classifications. The History of Science Collections holds 12 works by Smith. The Torrens Archive contains many research notes about Smith and his contemporaries.

Source: E. DeGolyer Collection, History of Science Collections.

## Charlotte Murchison, ammonite (west wall)



James Sowerby, *Mineral Conchology of Great Britain* (London, 1829), vol. 6, plate 550.

Charlotte Murchison was a leading fossil expert and an older friend of Mary Anning. Charlotte and Mary corresponded frequently and collected fossils together.

Charlotte's husband was the geologist Roderick Murchison, whose work owed much to Charlotte's initiative, expertise, abilities, and wealth. She persuaded him to undertake his geological studies. They conducted numerous wide-ranging geological tours together. In his numerous publications, he depended upon her drawing abilities and experience in fossil collecting.

James Sowerby named "*Ammonites Murchisonae*" in Charlotte's honor "*as a just tribute for the ardor with which she has pursued the study of Fossil Conchology.*" He noted that she discovered, excavated, and prepared the specimen herself on a visit to the Isle of Skye.

Source: History of Science Collections.

Open to: Plate 550, *Ammonites Murchisonae*

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## Etheldred Benett (west wall)



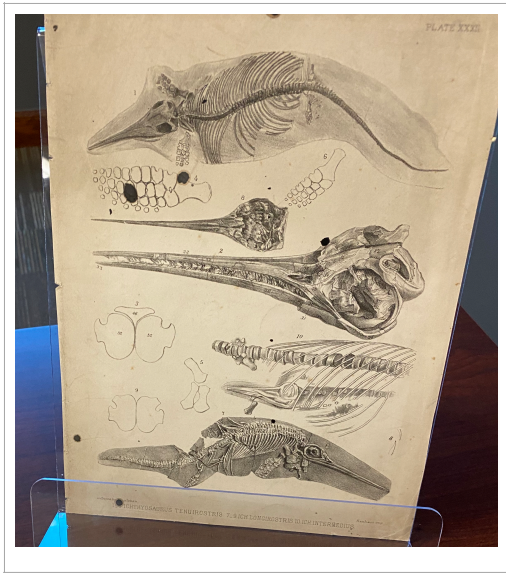
Etheldred Benett, *A Catalogue of the Organic Remains of the County of Wilts* (Warminster, 1831).

Another early woman geologist, Etheldred Benett, was an elder contemporary of Mary Anning. In contrast to Anning, Benett and Charlotte Murchison came from very different social and economic spheres. Benett's aristocratic status enabled her to develop contacts with the gentleman geologists of the Geological Society of London. As she stated, "I have no pleasure in collecting for myself alone..." Benett's relative financial security allowed her to dedicate time to writing, a luxury Anning could not afford. Benett inscribed and annotated this presentation copy of her book, in which she describes the fossils of Wiltshire from Bath to Lyme Regis.

Source: Hugh S. Torrens Collection, History of Science Collections. Silhouette: "Benett, 1776-1845, 1960-2020," Hugh S. Torrens Archive, History of Science Collections.



## Ichthyosaurs (west wall)



Lithograph by J. Erxleben, Plate XXXII.

Open to: single leaf (detached Plate XXXII).

This plate by James Erxleben (active 1839-1852) illustrates three different species of Ichthyosaurs: *Ichthyosaurus Tenuirostris* (#1-6); *Ichthyosaurus Longirostris* (#7-9); and *Ichthyosaurus Intermedius* (#10).

Source:

"Anning, 1833-1834, 1960-2020," Hugh S. Torrens Archive, History of Science Collections.



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## Elizabeth Philpot, Belemnite (west wall)



James Sowerby, *Mineral Conchology of Great Britain* (London, 1818), vol. 2, plate 167.

Elizabeth Philpot and her two sisters, Mary and Margaret, were artists, fellow fossil finders, and friends of Mary Anning in Lyme Regis. Elizabeth collected this specimen of “*Ammonites obtusus*.”

One day Anning showed Elizabeth a belemnite — a conical fossil shell derived from an extinct squid-like animal. Anning recognized that the belemnite contained a fossilized ink sac. Elizabeth recovered usable ink from it, and began using prehistoric belemnite ink in her sketches.

Source: History of Science Collections.

## Henry De la Beche, *Duria Antiquior* (west wall)



Henry De la Beche, *Duria Antiquior*, original watercolor, National Museum of Wales. *Will replace existing museum wall graphic.*

Reproduced on the cover of Martin J. S. Rudwick, *Scenes from Deep Time* (Chicago, 1992; to be displayed in the west wall vertical case).

Henry De la Beche, a geologist residing in Lyme Regis and a long-time friend of Anning, created *Duria Antiquior*, a watercolor depiction of “a more ancient Dorset.” Most of the creatures pictured are based on fossils Mary Anning collected.

*Can you find at least one of the following:  
ichthyosaur, plesiosaur, pterosaur, ammonite, crinoid, belemnite, and coprolite?*

In 1830 Anning’s finances, always precarious, were in dire straits. De la Beche had the watercolor reproduced as a lithograph print which he sold to members of the Geological Society and others in order to raise funds for Anning.



## Penny Magazine (west wall)

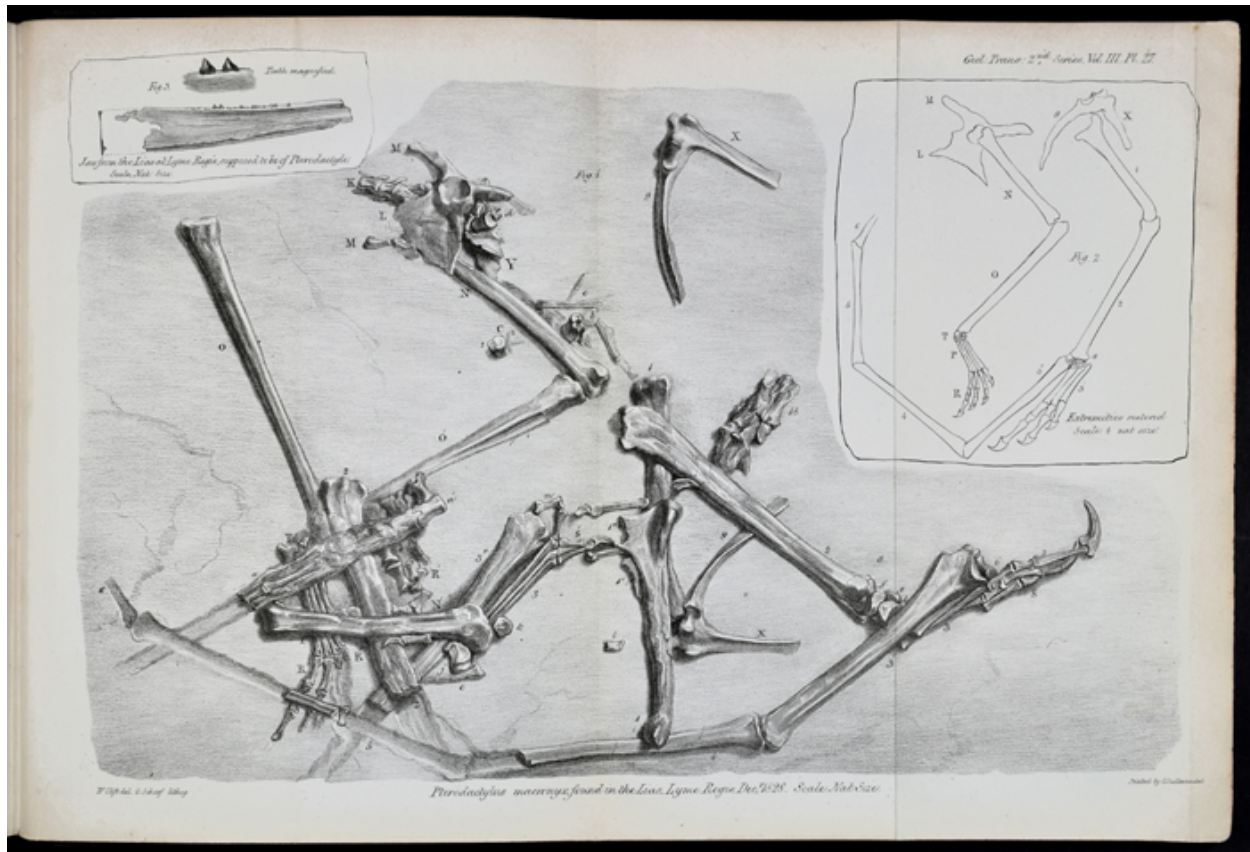


*The Penny Magazine of the Society for the Diffusion of Useful Knowledge. Volume II. London, October 26, 1833.*

*Duria Antiquior* inspired many others to reconstruct similar “scenes from deep time.” This magazine cover, “Organic Remains Restored,” also depicts plants and animals of Dorset strata. In addition to ferns and other plants, animals shown include a dragon fly, tortoise, megalosaur, ichthyosaur, plesiosaur, pterosaur, and ammonite, among others.

Source: “*Duria*, 1830-1850, 1960-2020,” Hugh S. Torrens Archive, History of Science Collections.

## Pterosaur (west wall)



William Buckland, "Discovery of a New Species of Pterodactyle" *Transactions of the Geological Society* (London, 1829), Second Series, vol. 3, pp. 217-222, Plate XXVII.

Although pterosaurs ("winged lizard"; or pterodactyls, "winged finger") were known from the Solnhofen limestone of Bavaria, in southern Germany, Mary Anning discovered the first fossil pterosaur in Britain. Buckland describes it as a new species of great flying dragon:

*"[It] somewhat resembled our modern bats and vampyres, but had its beak elongated like the bill of a woodcock, and armed with teeth like the snout of a crocodile; its vertebrae, ribs, pelvis, legs, and feet, resembled those of a lizard; its three anterior fingers terminated in long hooked claws like that on the fore-finger of a bat; and over its body was a covering... of scaly armour like that of an Iguana; in short, a monster resembling nothing that has ever been seen or heard-of upon earth, excepting the dragons of romance and heraldry."*

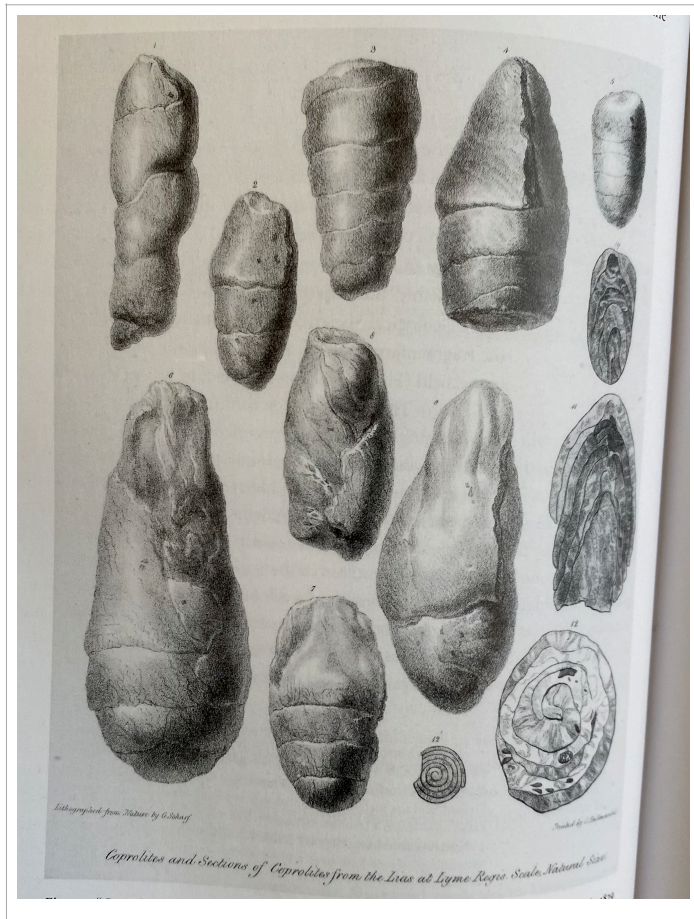
Fig. 1: *Pterodactylus macronyx*.

Fig. 2: Extremities restored.

Fig. 3: Jaw from the Lias at Lyme Regis, supposed to be of a Pterodactyle.



## Coprolites (west wall)

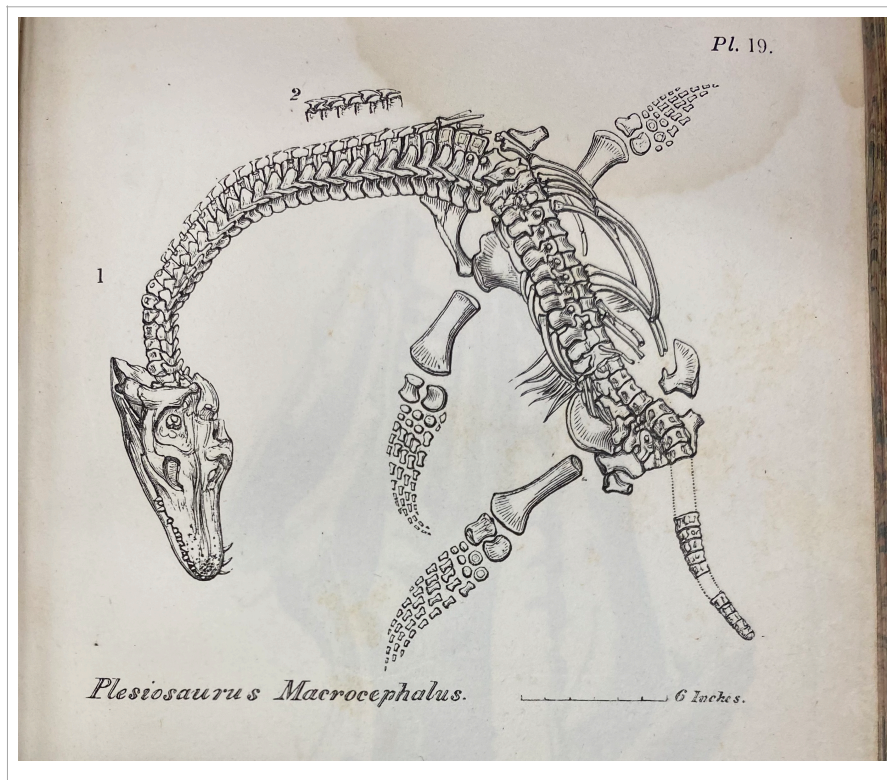


Citation: William Buckland, "Discovery of Coprolites" *Transactions of the Geological Society* (London, 1829), Second Series, vol. 3, pp. 223-36, Plate XXVIII.

Mary Anning investigated cylindrical stones with spiral markings known as "bezoar stones." She noticed that they were frequently situated in the abdominal regions of ichthyosaurs and plesiosaurs. She observed that small fossil bones and scales could be found inside them. Therefore, she reasoned, they might be fossilized feces. William Buckland took her suggestion seriously and renamed the stones "coprolites." He credited Anning in a paper to the Geological Society, writing that "*By the skill and industry of Miss Mary Anning*" they could now be interpreted correctly and promised to throw light on ancient food chains.

Source: History of Science Collections.

## Plesiosaur (west wall and window)



1. William Buckland, *Geology and Mineralogy considered with reference to Natural Theology* (London, 1836), vol. 2, plate 19.

In this work, William Buckland named a new species of fossil plesiosaur *macrocephalus* ("large head"). Buckland indicated the specimen was "found in Lias marl at Lyme Regis by Miss Anning, and [is] now in the collection of Lord Cole." Cole, later the 3rd Earl of Enniskillen, was a student and travel companion of Buckland, and a friend and client of Mary Anning. In a letter to Buckland, Anning described this plesiosaur as "without exception the most Beautiful fossil I have ever seen....." A replica is on display by the window.

Source: History of Science Collections.

## 2. Plesiosaurus replica



Plesiosaurus macrocephalus  
Resin replica, 34x28 inches.

Buckland gave this juvenile plesiosaur (“near-lizard”) the species name *macrocephalus* (“large head”). In a letter to Buckland, Anning described it as:

*“without exception the most Beautiful fossil I have ever seen.... I should remark that the head is twice as large in proportion as those I have hitherto found. The neck has a most graceful curve and what makes it more interesting is that resting on the bones of the pelvis is, its Coprolite finely illustrated.”*

Source: History of Science Collections



## Buckland lecture (west wall, on easel)

"The Geological Lecture Room, Oxford" (1823)

*Can you find Mary Anning in this hand-colored print?  
How many in the Oxford Lecture Room are women?  
How many women geologists are mentioned in this exhibit?*

The lithograph portrays a lecture in geology delivered by William Buckland at Oxford University in 1823. At least 12 persons in attendance were members of the Geological Society of London (including Buckland). Seven were fellows of the Royal Society of London. At least four became Bishops or Archbishops in the Anglican Church.

Too often women are invisible in the history of geology. Nevertheless, Anning exerts an invisible presence in this all-male space through the fossils and artifacts depicted and through her commercial and intellectual relationships with the men present — including Buckland himself. William and Mary Buckland were friends and supporters of Anning.



Buckland's lecture took place in the Ashmolean Museum, Broad Street, Oxford, on February 15, 1823. The artist was Nathaniel Whittock; it was printed by Charles Joseph Hullmandel. The ichthyosaur skull on the floor is one of De la Beche's from Lyme Regis, as likely are the large ammonites (on the floor and in the hands of Buckland).

The various artifacts and persons depicted in the lithograph create a snapshot of English geology in 1823 at the time Mary Anning was making her sensational discoveries along with Etheldred Benett, Elizabeth Philpot, Mary Buckland, and Charlotte Murchison.

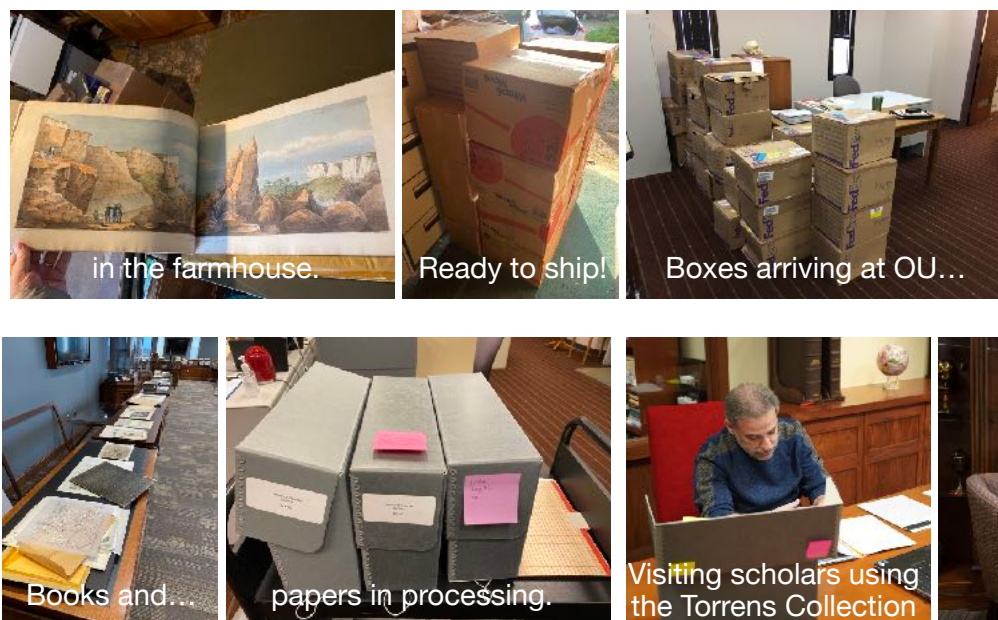
The lithograph represents the gradual discovery of deep time and a pre-human Earth history; the growing importance of the field sciences; the establishment of a place for the natural sciences in the English universities; religious and social factors affecting the audience for science; the emergence of new scientific disciplines such as geology; the relations between expert practitioners and non-expert colleagues; the integration of physical objects and visual representations into lectures and presentations; and the pervasive invisibility of women contrary to their significance as collaborators and partners in the actual practice of the natural sciences.

Source: History of Science Collections.

## Hugh S. Torrens Collection



Donor: Hugh and Shirley Torrens  
Location: Countryside in Staffordshire, England  
(books filled Torrens' home + neighbor's farmhouse)  
Materials: 105 large boxes of papers and books  
Date: Collected on three occasions in 2018, 2019, and 2021


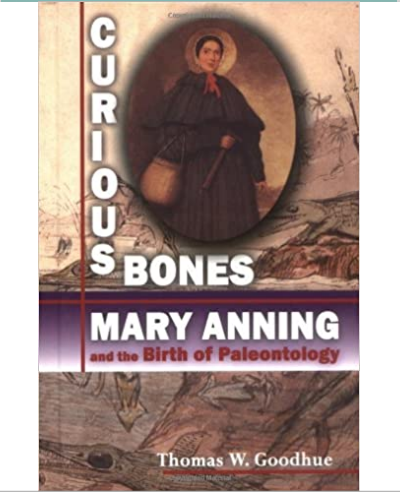


Torrens' nearly 400 publications cluster around a common theme of the historical relations between industrialization and geology. Torrens' passion has been to recover the voices of invisible and forgotten figures. Torrens has devoted considerable scholarly attention to William Smith and Mary Anning. William Smith, creator of the single most renowned geological map, was a working-class canal surveyor by trade, whose famous map led not to honor but to confinement in debtor's prison. Mary Anning, a working-class discoverer of dinosaur fossils near Lyme Regis, in Dorset, made a lot of gentlemen geologists famous. The Torrens archive is rich in materials related to these figures and their associates and contemporaries.

The Torrens Collection is part of the History of Science Collections' collecting initiative in the History of Geology. To launch this initiative, the Collections has acquired the papers of eminent historians of geology including Hugh S. Torrens, Martin J. S. Rudwick, and Kenneth L. Taylor. Please inquire with the Curator if you would like to receive news updates or to financially support this Collecting Initiative.



## Further reading

<p><b>Children</b></p>	<p>Linda Skeers, <i>Dinosaur Lady: The Daring Discoveries of Mary Anning, the First Paleontologist</i>, illustrated by Marta Álvarez Miguéns (2020)</p> <p>A superb introduction to Mary Anning in an illustrated children's book.</p>	
<p><b>Youth</b></p>	<p>Thomas W. Goodhue, <i>Curious Bones: Mary Anning and the Birth of Paleontology</i> (2002)</p> <p>A remarkably accurate and accessible introduction to Mary Anning written at a Grade 5-9 reading level.</p>	
<p><b>Adult</b></p>	<p>Tom Sharpe, <i>The Fossil Woman: A Life of Mary Anning</i> (2020)</p> <p>If you want the most accurate and up-to-date information about Mary Anning, start here.</p> <p>Hugh Torrens, "Mary Anning (1799-1847) of Lyme; 'the greatest fossilist the world ever knew,'" <i>British Journal for the History of Science</i> 28 (1995): 257-284.</p> <p>A presidential address to the British Society for the History of Science by the pioneering scholar of Mary Anning studies. Further scholarship (such as Sharpe's book) builds upon Torrens' work, represented here.</p> <p>Available online: <a href="https://doi.org/10.1017/S0007087400033161">https://doi.org/10.1017/S0007087400033161</a> P</p>	