

Testing Faith For gr. 9-12

Needed for the lesson: *Remarkable Creatures*, Tracy Chevalier

In preparation: Optional- students can read *Remarkable Creatures* in its entirety

Introduction: “Cuvier has suggested that animal species sometimes die out when they are no longer suited to survive in the world. The idea is troubling to people because it suggests that God does not have a hand in it, that He created animals and then sat back and let them die. Then there are those like Lord Henley, who say the creature is an early model for a crocodile, that God made it and rejected it. Some think God used the Flood to rid the world of animals He didn’t want. But these theories imply God could make mistakes and need to correct Himself. Do you see? All of these ideas upset someone.”
(*Remarkable Creatures*, pgs. 102-103)

In the 19th century, religion and science sometimes came into conflict. There were those who believed that to understand the natural world and how it came to be, one must rely on the Bible- to Scriptures and the Book of Genesis, including the story of Noah’s Ark. Geology began to emerge as a new scientific discipline. With increased study and discovery, radically different ideas challenged what was written in the Bible regarding how the earth was formed. Many leading geologists, who often were themselves members of the clergy, sought to interpret Scripture in ways that preserved harmony between the Bible and geology, while Scriptural literalists maintained that the Bible could not be contradicted or interpreted to accommodate new knowledge. Then there were those who believed in the concept of “natural theology”, that God’s works could best be understood using reason and observation of the natural world. Scientific and religious thought were intermingled but beginning to break apart, leaving all- scientists, religious leaders, religious scientists, and laypeople, with disturbing questions and concerns.

Young fossil hunter Mary Anning found a fossilized skeleton on a beach in Lyme Regis, England, in 1811. It was about 18 feet long and some people thought at the time that it was a crocodile, but was it? In the book *Remarkable Creatures*, by Tracy Chevalier, Mary’s friend and fellow fossil hunter Elizabeth Philpot, questions who and what to believe about this intriguing creature.

Procedure:

1. Divide the class into 3 groups and assign one of the following topics to each:
 - Extinction
 - Noah’s Flood
 - Creationism
2. Each group receives excerpts from *Remarkable Creatures* and guiding questions to create a Readers’ Theater piece. They also receive the image, “The creature found by Mary Anning in Lyme Regis, England in 1811”. The creationism and extinction groups receive ammonite images as well. Students may use any existing dialog and are asked to create some of their own to provide further explanations. In Readers’ Theater there should be minimal to no action or props. The emphasis should be on creating the dialogs and reading expressively.
3. Groups perform in the following order: creationism, Noah’s Flood, extinction

4. Culminating discussion

On page 103 of *Remarkable Creatures*, Elizabeth noted that, “All of these ideas upset someone.”

- Who would have been upset by Cuvier’s ideas about extinction, “that animal species sometimes die out when they are no longer suited to survive in the world”? Why? (Creationists-those that believed God created the world would have been upset because they believed He would not let any animals become extinct. They also would have been upset because they believed God never made mistakes.)
- Who would have been upset by the idea that “God used the Flood to rid the world of animals He didn’t want”? Why? (Those who believed in extinction and those who were not religious would have been upset with the idea that the flood was capable of altering the landscape or causing species to disappear. Their observations of the natural world led them to believe as Georges Cuvier did, that “animal species sometimes die out when they are no longer suited to survive in the world.” They believed that the world went through great changes over time and animals either gradually adapted to those changes or died out.)
- Who would be upset by the following? “All that you see about you is as God set it out in the beginning. He did not create beasts and then get rid of them. That would suggest He made a mistake, and of course God is all knowing and incapable of error, is He not?” Why would they be upset? (Those that believed in extinction and scientists who were not religious would have been upset. They believed that the world went through great changes over time and animals either gradually adapted to those changes or died out, all without God having anything to do with it They did not believe in the Creation story)
- Over time, would there be resolution? Do we have resolution today? (Although most people would come to believe in evolution and extinction, there were those who tried to bridge the gap between religion and geology by saying that, “Geology is always to be used in the service of religion, to study the wonders of God’s creation and marvel at His genius.” In addition, there are still those today who do not believe in evolution.)

Guiding questions answers

Extinction

- Why would someone think this was the skeleton of a crocodile? (answers may vary)
- Does or has England ever had crocodiles living in the wild? (no)
- Why might God be mad at Elizabeth for thinking this was an animal that no longer exists? (There were those who believed that God never made mistakes and he never let any species die out.)
- What might have caused the extinction of animals that aren’t around today? (a catastrophe such as a volcano or earthquake, or to some religious people who believed in extinction, Noah’s Flood)
- Be ready to explain an ammonite (an extinct shellfish similar to today’s chambered nautilus)

Noah’s Flood

- What do the terms “deluge” and “diluvian” mean? (deluge- a very big flood; diluvian- pertaining to Noah’s Flood)
- What did Buckland believe about the Flood? (He believed it covered the whole world and in the many years between then and now, there were “revolutions” when new life forms were created.)
- Did God make something that was on the ark we don’t know about? (answers may vary)

- *Why would God make creatures that don't exist anymore?* (Answers may vary; those who believed God created the world and did not let any animals become extinct, would have said that all of the animals He created are still alive somewhere in the world.)

Creationism

- What does "creationism" mean? ("The belief that the universe and living organisms originate from specific acts of divine creation, as in the biblical account, rather than by natural processes such as evolution." <https://en.oxforddictionaries.com/definition/creationism>)
- If God didn't "create beasts and then get rid of them", where are the animals not seen today, such as the creature Mary found? (answers may vary)
- Reverend Jones didn't provide a direct answer to Elizabeth's question about how fossils can be found inside of rocks. What might his explanation have been? (answers may vary)
- Be prepared to explain an ammonite (an extinct shellfish similar to today's chambered nautilus)

Extinction

Elizabeth Philpot's young friend Mary Anning found a fossilized skeleton on a beach in Lyme Regis, England, in 1811. It was about 18 feet long and some people thought at the time that it was a crocodile, but was it? Elizabeth ponders that with her sister Louise, in Remarkable Creatures (pg. 102):

"Do you know, Louise," I began, "I think- I think it's not a crocodile at all. It doesn't have the anatomy of a crocodile, but no one wants to say so publicly."

Louise's gray eyes remained clear and steady. "What is it, if not a crocodile?"

"A creature that no longer exists." I waited for a moment, to see if God would bring the ceiling crashing down on me. Nothing happened.....

"How can that be?"

"Do you know of the concept of extinction?"...."Cuvier has suggested that animal species sometimes die out when they are no longer suited to survive in the world. The idea is troubling to people because it suggests that God does not have a hand in it, that He created animals and then sat back and let them die. ...

But these theories imply God could make mistakes and need to correct Himself. Do you see? All of these ideas upset someone."

You will create a Readers' Theater dialog between Elizabeth and Reverend Jones, who does not believe in extinction. Elizabeth needs to defend Georges Cuvier's beliefs. You can use any dialog provided on these pages and you should create some to provide further explanation from Reverend Jones. You can also create more questions and replies for Elizabeth. In Readers' Theater there should be minimal to no action or props. The emphasis should be on creating the dialogs and reading expressively.

Here are questions to answer in the dialog that you create:

- Why would someone think this was the skeleton of a crocodile?
- Does or has England ever had crocodiles living in the wild?
- Why might God be mad at Elizabeth for thinking this was an animal that no longer exists?
- What might have caused the extinction of animals that aren't around today?
- Be ready to explain an ammonite

A conversation between Elizabeth and Reverend Jones in Remarkable Creatures (pgs. 88-90):

"But the skeletons- are they of creatures that still exist today?".....

"Of course they exist," he said. "All of the creatures God made exist.....I'm afraid I don't understand your question, Miss Philpot"....

Ignoring his question, I held out an ammonite. "I should like to know where the live versions of these are, Reverend Jones, for I have never seen one.".....

Reverend Jones's response to the ammonite was more prosaic. "Perhaps you haven't seen them because they live out at sea, and their bodies only wash up after they die."

"Have you heard about the crocodile head the Annings have found in the cliffs and are showing at the Assembly Rooms?" I asked.....

"I know of it, yes."

"Have you seen it?"

"I have no desire to see it."....

"The specimen does not look like any creature that lives now," I said....

"Miss Philpot, I am surprised. I thought you and your sisters were well versed in the Bible.".....

“Let me make it clear: You need only look to Scripture for answers to your questions.....”

Pg. 92:

“All that you see about you is as God set it out in the beginning. He did not create beasts and then get rid of them. That would suggest He had made a mistake, and of course God is all-knowing and incapable of error, is He not?”

pg. 103- Elizabeth answers her sister Louise’s question:

“How does he [Reverend Jones] explain Mary’s creature, then?”

“He thinks they are swimming about of the coast of South America, and we haven’t yet discovered them.”

“Could that be true?”

I shook my head. “Sailors would have seen them. We have been sailing around the world for hundreds of years and never had a sighting of such a creature.”

Pgs. 183 & 184- an acquaintance of Elizabeth’s, Colonel Birch, explains what he knows about the subject to a companion:

“As far as we know, no ichthyosaurus [Mary’s creature] exists now and has not done for some time. This means, dear lady, that learned men are charged with discovering how these creatures died out.”

“Some have suggested they died in Noah’s Flood; others that some other sort of catastrophe killed them, like a volcano or an earthquake. Whatever the cause, their existence affects our knowledge of the age of the world...”

“I have been reading about Cuvier’s Doctrine of Catastrophes,” Colonel Birch continued, showing off his knowledge. “Cuvier suggests that the world has been shaped over time by a series of terrible disasters, violence on such a great scale that it has created mountains and blasted seas and killed off species. Cuvier himself did not mention God’s hand in this, though others have interpreted these catastrophes as systematic- God’s regulation over His creation. The Flood would be simply the most recent of these events...”

For more information, read the following:

- Georges Cuvier: <https://dinotracksdiscovery.org/supporting/person/georges-cuvier/>
- Read paragraphs 1 and 4 of “Catastrophism and Uniformitarianism”:
<https://dinotracksdiscovery.org/supporting/context/catastrophism-uniformitarianism/>

Noah's Flood

Elizabeth Philpot's young friend Mary Anning found a fossilized skeleton on a beach in Lyme Regis, England, in 1811. It was about 18 feet long and some people thought at the time that it was a crocodile, but was it? In Remarkable Creatures (pg. 103), Elizabeth wonders if it was some other creature that God created but didn't want:

"Some think God used the Flood to rid the world of animals He didn't want.... But these theories imply God could make mistakes and need to correct Himself. Do you see? All of these ideas upset someone."

You will pretend to be the geologist, William Buckland, who believed Noah's Flood did take place. You'll use Readers' Theater to use any dialog that you choose on these pages, plus, you will create more in order to respond more fully to Mary Anning about how and why you justify the Flood as your answer. You can create more questions or responses for Mary, as well. In Readers' Theater there should be minimal to no action or props. The emphasis should be on creating the dialog and reading expressively.

Here are questions to answer in the dialog that you create:

- What do the terms "deluge" and "diluvian" mean?
- What did Buckland believe about the Flood?
- *Did God make something that was on the ark we don't know about?*
- *Why would God make creatures that don't exist anymore?"*

Pgs. 128 & 129- Mary Anning and geologist William Buckland are in Mary's workshop, examining the "crocodile":

"Sir," I said, "is this one of the creatures Noah brought on his ark?"

"What do you think?"

"Miss Philpot showed me pictures of crocodiles drawn by Cruver- Cuver- the Frenchman who does all those studies of animals."

"Georges Cuvier?"

"Yes, him. So we compared his drawings with this and found it were different in so many ways.....So Miss Philpot and I wondered what it could be if it's not a croc. Then I heard you and a gentleman you brought here the other day, Reverend Conybeare. You was talking about the "Flood"- actually they'd used the words 'deluge' and 'diluvian,' and I'd had to ask Miss Elizabeth what they meant- "and it made me wonder: If this ain't a crocodile, which Noah would've had on the ark, then what is it? Did God make something that was on the ark we don't know about?.....Why would God make creatures that don't exist anymore?"

pgs. 130 & 131:

"And once there were people, on the sixth 'day', the Flood came, and when it subsided, it left the world as we see it today, in all its grandeur."

"Where did all the water go?"

"Back into the clouds from whence the rain came," he replied.

Pg. 184- Mary's acquaintance, Colonel Birch, is explaining what he knows about the topic to a companion:

"I have been reading about Cuvier's Doctrine of Catastrophes," Colonel Birch continued, showing off his knowledge. "Cuvier suggests that the world has been shaped over time by a series of terrible

disasters, violence on such a great scale that it has created mountains and blasted seas and killed off species. Cuvier himself did not mention God's hand in this, though others have interpreted these catastrophes as systematic- God's regulation over His creation. The Flood would be simply the most recent of these events..."

For more information, read the following:

- Read paragraphs 1 and 4 of "Catastrophism and Uniformitarianism":
<https://dinotracksdiscovery.org/supporting/context/catastrophism-uniformitarianism/>
- Read paragraphs 1-4 of "The Religion of Geology":
<https://dinotracksdiscovery.org/supporting/context/religion-geology/>
- Read paragraphs 1, 2, and the first half of paragraph 5 through "Genesis" of "The Raven, the Ark, and Flood Geology": <https://dinotracksdiscovery.org/supporting/context/raven-ark/>
- Read paragraphs 3 & 6 of "William Buckland":
<https://dinotracksdiscovery.org/supporting/person/william-buckland/>
- Read paragraph 2 of Georges Cuvier:
<https://dinotracksdiscovery.org/supporting/person/georges-cuvier/>

Creationism

Elizabeth Philpot's young friend Mary Anning found a fossilized skeleton on a beach in Lyme Regis, England, in 1811. It was about 18 feet long and some people thought at the time that it was a crocodile, but was it? Elizabeth wondered if it was a creature from the past that didn't exist anymore and she asked the Reverend Jones what he thought:

*"But the skeletons- are they of creatures that still exist today?".....
"Of course they exist," he said. "All of the creatures God made exist.....I'm afraid I don't understand your question, Miss Philpot".... (Remarkable Creatures, pg. 88)*

You will create a dialog between Elizabeth and Reverend Jones, who believed in creationism. You'll use Readers' Theater to use any dialog that you choose on these pages, plus, you will create more in order to have Reverend Jones respond more fully to Elizabeth's questions. You can create more questions or responses for Elizabeth, as well. In Readers' Theater there should be minimal to no action or props. The emphasis should be on creating the dialog and reading expressively.

Here are questions to answer in the dialog that you create:

- What does "creationism" mean?
- If God didn't "create beasts and then get rid of them", where are the animals not seen today, such as the creature Mary found?
- Reverend Jones didn't provide a direct answer to Elizabeth's question about how fossils can be found inside of rocks. What might his explanation have been?
- Be prepared to explain an ammonite

Pg. 81: Elizabeth wonders if creatures from long ago still exist:

I had discovered from conversations I'd had about fossils with the people of Lyme that few wanted to delve into unknown territory, preferring to hold on to their superstitions and leave unanswerable questions to God's will rather than find a reasonable explanation that might challenge previous thinking. Hence, they would rather call this animal a crocodile than consider the alternative: that it was the body of a creature that no longer existed in the world.

This idea was too radical for most to contemplate. Even I, who considered myself open-minded, was a little shocked to be thinking it, for it implied that God did not plan out what He would do with all the animals He created."

Pgs. 88-90:

*"But the skeletons- are they of creatures that still exist today?".....
"Of course they exist," he said. "All of the creatures God made exist.....I'm afraid I don't understand your question, Miss Philpot"....*

Ignoring his question, I held out an ammonite. "I should like to know where the live versions of these are, Reverend Jones, for I have never seen one.".....

Reverend Jones's response to the ammonite was more prosaic. "Perhaps you haven't seen them because they live out at sea, and their bodies only wash up after they die."

Pgs. 92 & 93:

"You see, Miss Philpot, it really is very simple," Reverend Jones said....."All that you see about you is as God set it out in the beginning. He did not create beasts and then get rid of them. That would suggest He made a mistake, and of course God is all knowing and incapable of error, is He not?"

"I suppose not," I conceded.

Reverend Jones's mouth writhed. "You suppose not?"

"Of course not," I said quickly. "I'm sorry; it's just that I am confused. You are saying that everything we see around us is exactly as God created it, are you not? The mountains and seas and rocks and hills—the landscape is as it was at the beginning?"

"Of course."

"So every rock we see is as God created it at the beginning," I persisted. "And the rocks came first, as it says in Genesis, before the animals."

"Yes, yes." Reverend Jones was becoming impatient, his mouth chewing an imaginary straw.

"If that is the case, then how did the skeletons of animals get inside rocks and become fossils? If the rocks were already created by God before the animals, how is it that there are bodies in the rocks?"

"God placed the fossils there when He created the rocks, to test our faith," he responded at last. "As He is clearly testing yours, Miss Philpot."

pg. 103- Elizabeth answers her sister Louise's question:

"How does he [Reverend Jones] explain Mary's creature, then?"

"He thinks they are swimming about of the coast of South America, and we haven't yet discovered them."

"Could that be true?"

I shook my head. "Sailors would have seen them. We have been sailing around the world for hundreds of years and never had a sighting of such a creature."

pgs. 129 & 130- during a visit with Mary Anning, the geologist William Buckland provided this answer to a question she asked:

"Why would God make creatures that don't exist anymore?"

"You are not the only person to ask this question, Mary," he said. "Many learned men are discussing it. Cuvier himself believes there is such a thing as the extinction of certain animals, in which they die away completely. I am not so sure of that, however. I cannot see why God would want to kill off what He has created." Then he brightened and the worry left his eyes. "My friend the Reverend Conybeare says that while the Scriptures tell us that God created Heaven and Earth, they don't describe how He did it. That is open to interpretation." "Geology is always to be used in the service of religion, to study the wonders of God's creation and marvel at His genius." "God in His infinite wisdom has peppered this world with mysteries for me to solve."

For more information, read the following:

- Read paragraphs 3 & 6 of "William Buckland":
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- Read paragraph 2 of Georges Cuvier:
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- Read paragraphs 1, 2, and the first half of paragraph 5 through "Genesis" of "The Raven, the Ark, and Flood Geology": <https://dinotracksdiscovery.org/supporting/context/raven-ark/>

Massachusetts Science and Technology/Engineering Curriculum Framework

LS4. Biological Evolution: Unity and Diversity

HS-LS4-1. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence, including molecular, anatomical, and developmental similarities inherited from a common ancestor (homologies), seen through fossils and laboratory and field observations. Clarification Statement:

- Examples of evidence can include the work of Margulis on endosymbiosis, examination of genomes, and analyses of vestigial or skeletal structures. HS-LS4-2. Construct an explanation based on evidence that Darwin’s theory of evolution by natural selection occurs in a population when the following conditions are met:
 - (a) more offspring are produced than can be supported by the environment,
 - (b) there is heritable variation among individuals, and
 - (c) some of these variations lead to differential fitness among individuals as some individuals are better able to compete for limited resources than others. Clarification Statement:
- Emphasis is on the overall result of an increase in the proportion of those individuals with advantageous heritable traits that are better able to survive and reproduce in the environment.

HS-LS4-5. Evaluate models that demonstrate how changes in an environment may result in the evolution of a population of a given species, the emergence of new species over generations, or the extinction of other species due to the processes of genetic drift, gene flow, mutation, and natural selection

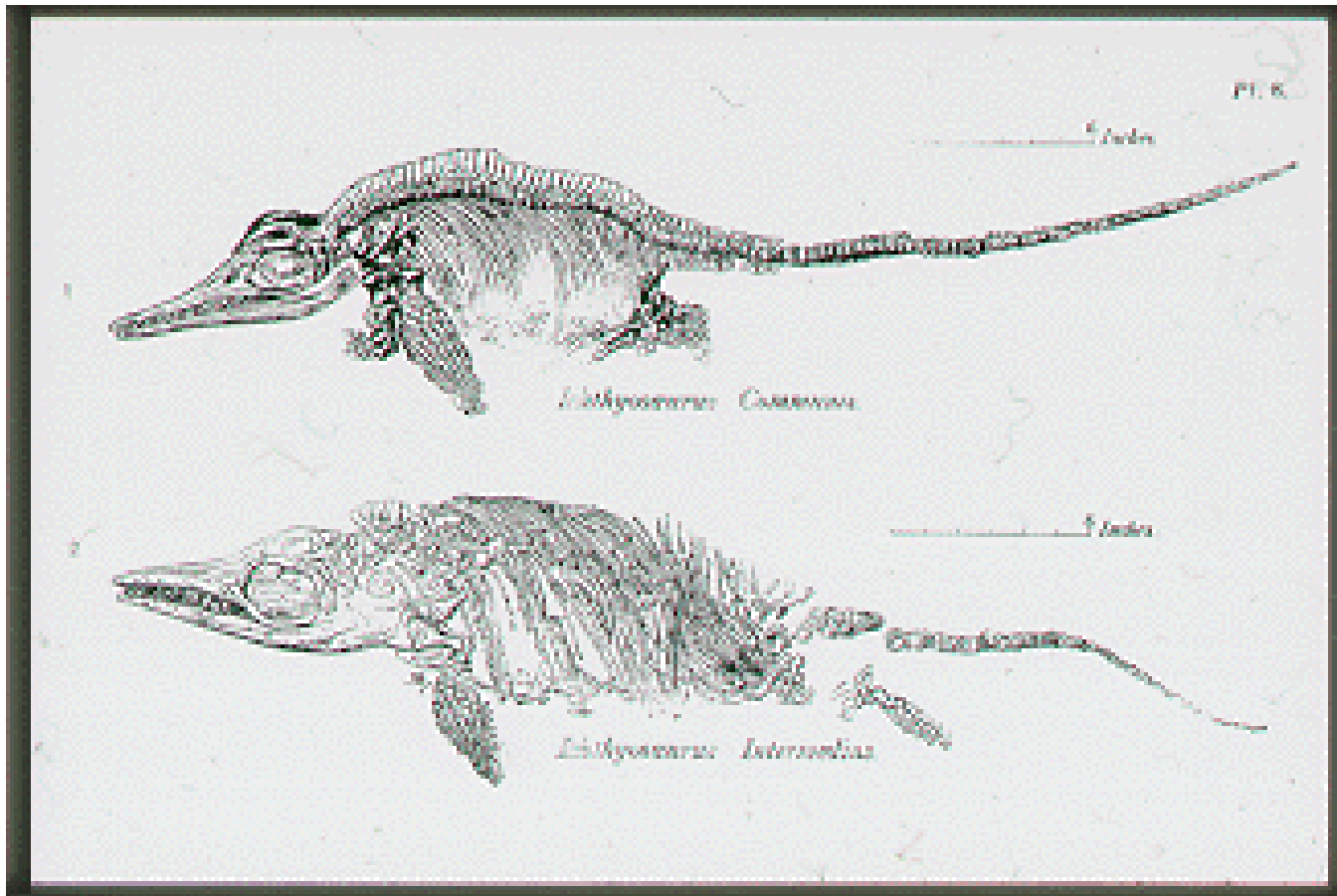
Massachusetts History and Social Science Curriculum Framework

Concepts and Skills, Grades 8-12

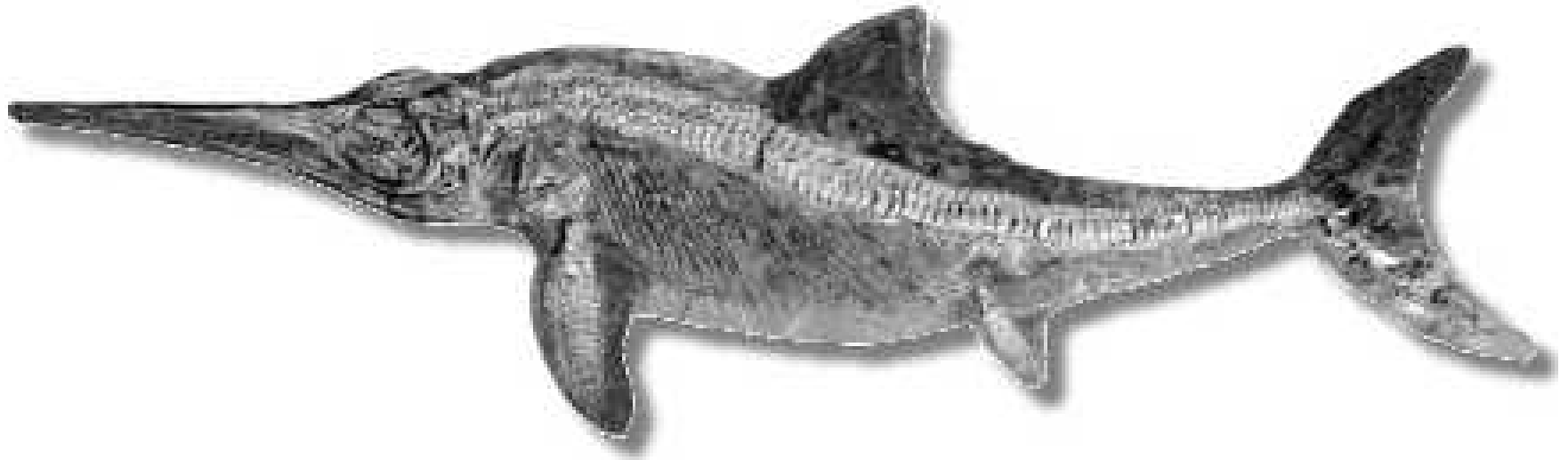
History and Geography

8. Interpret the past within its own historical context rather than in terms of present-day norms and values. (H, E, C)

10. Distinguish historical fact from opinion. (H, E, C)

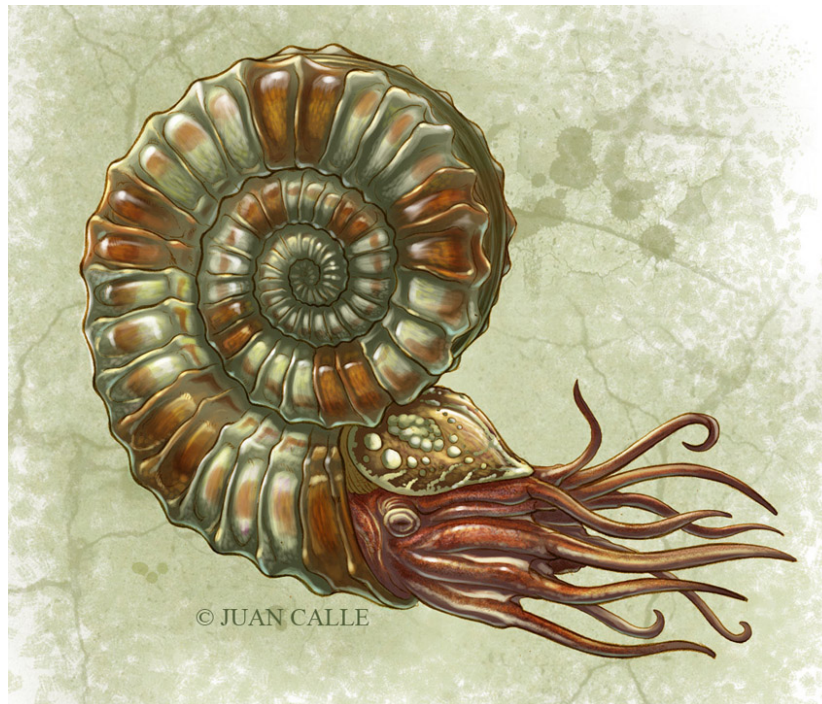


The creature (an ichthyosaur) found by Mary Anning in Lyme Regis, England in 1811
<http://www.ucmp.berkeley.edu/history/Anning/MystIchthys.gif>



Ichthyosaur

http://www.thedorsetpage.com/people/mary_anning.htm



Ammonite

http://orig12.deviantart.net/20b3/f/2007/053/6/d/ammonite_by_onikaizer.jpg