

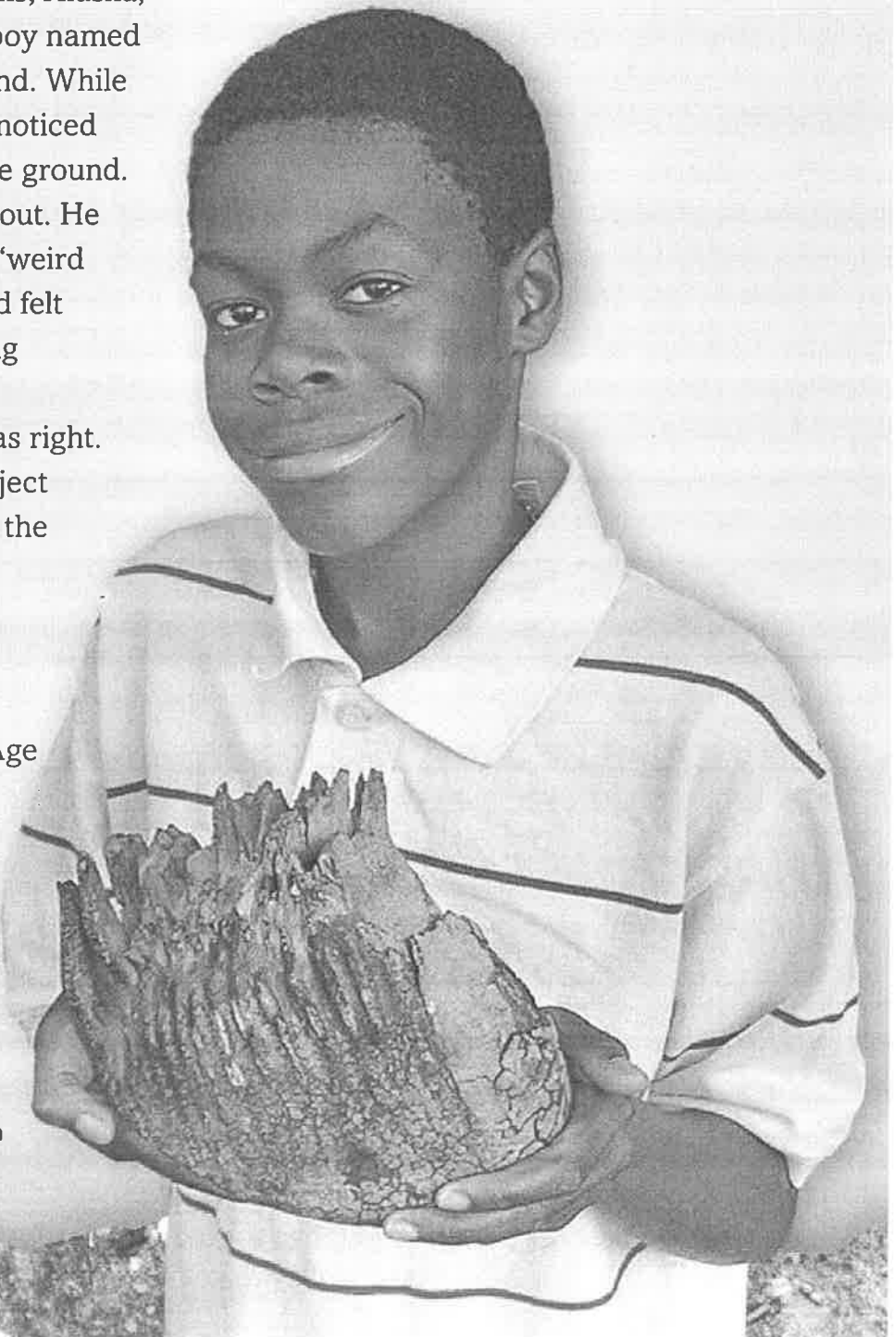
FOSSILS

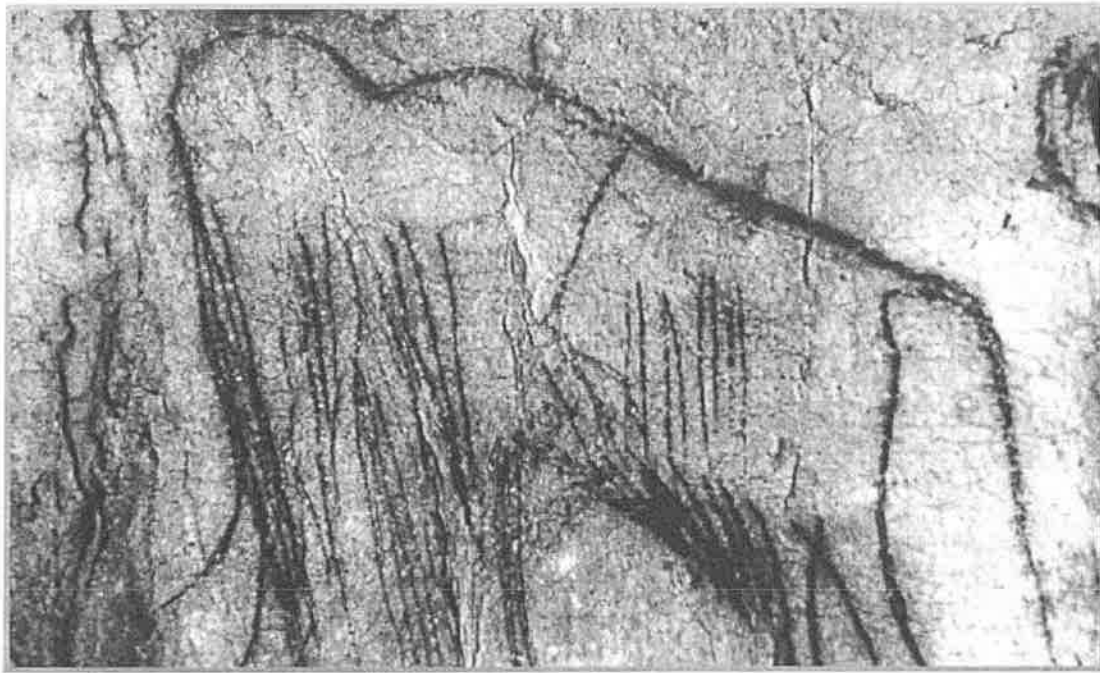
A PEEK INTO THE PAST

Big news came out of Fairbanks, Alaska, in the fall of 2007. A ten-year-old boy named Jared Post had made a fantastic find. While walking home from school, Jared noticed a big, jagged rock half buried in the ground. Instantly curious, he dug the rock out. He noticed that it had what he called “weird engravings” on its underside. Jared felt pretty sure he had found something special—a fossil.

The young student’s hunch was right. After bringing the toaster-sized object home, Jared and his dad searched the Internet for information. They discovered that the strange “rock” was in fact the tooth of a woolly mammoth, a giant mammal that lived during the Ice Age. The Ice Age occurred between 1.6 million and 10,000 years ago. In other words, that tooth was old!

The huge mammoth tooth Jared Post found weighed seven pounds. Jared is deciding whether to keep the tooth or donate it to a museum.





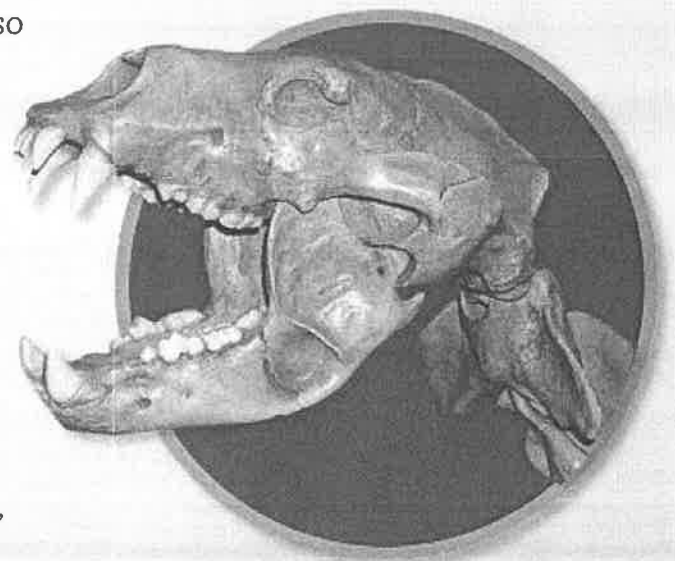
This drawing of a woolly mammoth was found on a cave wall in France.

Traces of the Past

Today, mammoths are extinct, meaning they no longer exist. Scientists can learn about them only by studying whatever remains they can find, such as bones, tusks, and teeth.

Animal teeth give a lot of information. By studying teeth, scientists can make a good guess about an animal's diet. Carnivores, or meat-eating animals, have sharp canine teeth to stab and hold on to prey. Herbivores are plant eaters, so they have large molars for chewing plants.

Although mammoths roamed throughout much of North America, Europe, Asia, and Africa, their bones and teeth are found mainly in areas with very cold weather. Any ideas why? It's because bones and teeth buried in frozen ground are less likely to be damaged. It's not surprising that Jared's mammoth tooth lasted 10,000 years or more. In his hometown of Fairbanks, the temperature stays below freezing more than half the year!



The pointed teeth of carnivores are much different than herbivore teeth.

Imagine a Woolly Mammoth!

For about two million years, woolly mammoths roamed the northern plains of Europe, North America, and Asia. Then, about 10,000 years ago, they disappeared, leaving only fossilized clues to their presence.

Thought to be early ancestors of today's elephants, these giant beasts were covered in dense shaggy hair. A thick layer of fat protected them from the cold. Teeth such as the one Jared discovered, probably a molar, indicates they were grass and leaf eaters. They used their long curving tusks, scientists believe, to shovel snow off the ground to reach buried plants.

Mammoths weighed about six to eight tons and stood about nine feet tall. Imagine an animal standing about as high as a one-story house and weighing as much as three or four full-sized pickup trucks.

"Just thinking about mammoths walking around my neighborhood 10,000 years ago is amazing!" Jared Post told reporters.



Fossils have given us most of the clues about the woolly mammoth.



Dots on this map show some of the major North American sites where mammoth fossils have been found.

One Girl's Remarkable Finds

Another super-successful young fossil hunter was Mary Anning, who was born on the south coast of England. Mary got quite a head start on recent fossil finders. She discovered the skeleton of a giant sea creature when she was about eleven years old. That was in 1810!

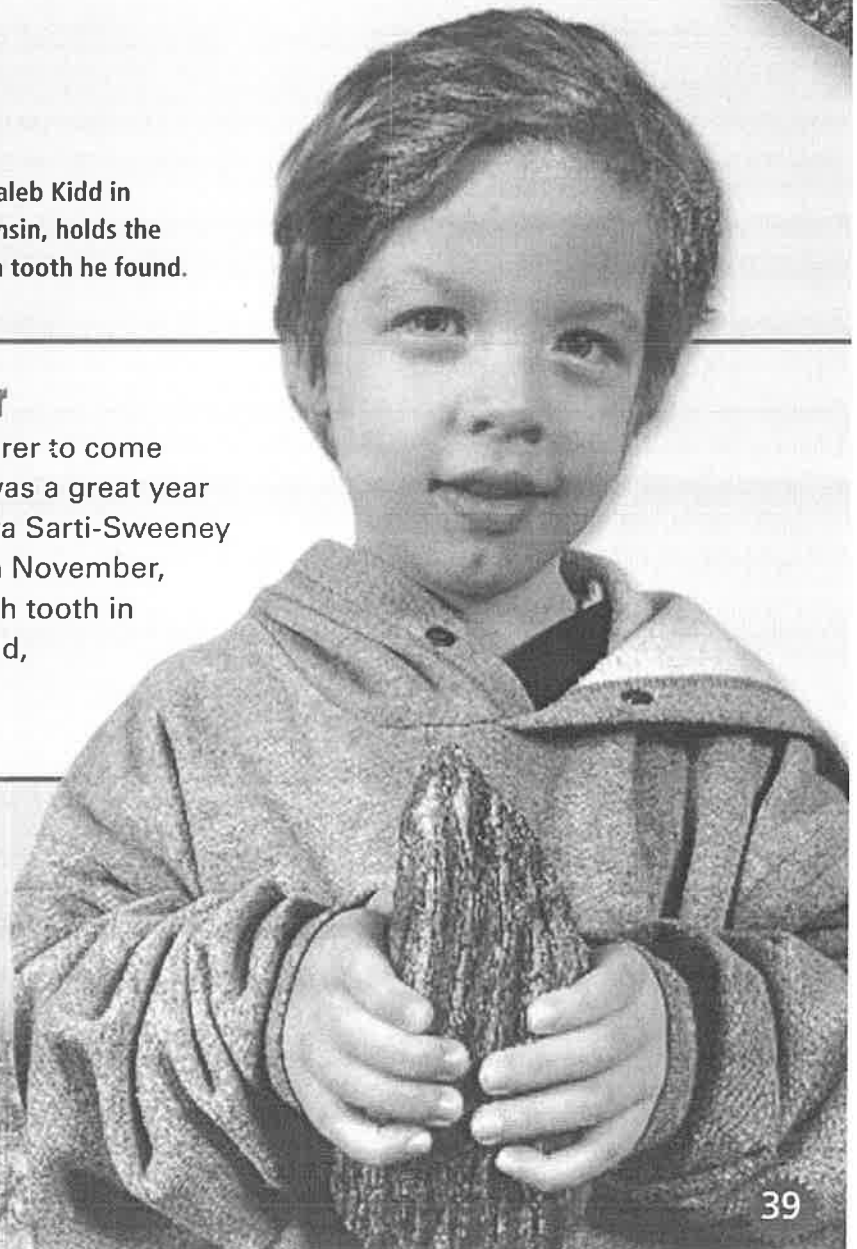
Scientists had never seen anything like the bones Mary found. They named it *ichthyosaurus* (ick thee oh SOR us), from the Greek words for fish and lizard. But it was not a fish at all. Later research proved it to be the fossilized body of a giant sea reptile.

Mary got credit for finding the very first ichthyosaur fossil. But she discovered others as well. In 1821, she found two—one five feet long and the other almost twenty feet long. These discoveries started a fossil craze in England.

Three-year-old Kaleb Kidd in La Crosse, Wisconsin, holds the woolly mammoth tooth he found.

A Very Good Year

Jared wasn't the only young discoverer to come across a mammoth's tooth in 2007. It was a great year for finds! In February, 16-year-old Sierra Sarti-Sweeney found a tooth in Tampa, Florida. And in November, little Kaleb Kidd discovered a mammoth tooth in La Crosse, Wisconsin. At three years old, Kaleb might be the youngest fossil finder ever!



Nature's Memory Keepers

A fossil is the remains of a plant or an animal that lived a long time ago.

The word "fossil" was first used in the 1500s. It comes from a Latin word that means "dug up from the ground." The most common kind of fossil is an imprint, or outline, of the plant or animal in a rock. These kinds of fossils are formed in much the same way as a handprint in clay. Other kinds of fossils include animal bones and footprints, or even a trail left by a worm.

Fossils might be called nature's memory keepers because they show what once was. They are little—or sometimes big—pieces of history. Because fossils give us clues about extinct plants and animals, they help us understand what the world was like in the distant past.



Fossil of a wading bird
found in Wyoming

The coastal area where Mary lived was, and still is, full of fossils. Most of these are the remains of animals that lived in the seas between 206 and 144 million years ago, a time known as the Jurassic period. The ichthyosaurus was from this time, when dinosaurs roamed the earth. But Mary was also the first to discover the remains of another Jurassic sea creature.

This skeleton, found in 1823, was equally large and strange. The fossil measured nine feet long and six feet wide. Compared to its giant body, its head was tiny—not quite five inches long! The creature was named Plesiosaurus, meaning "almost like a lizard."

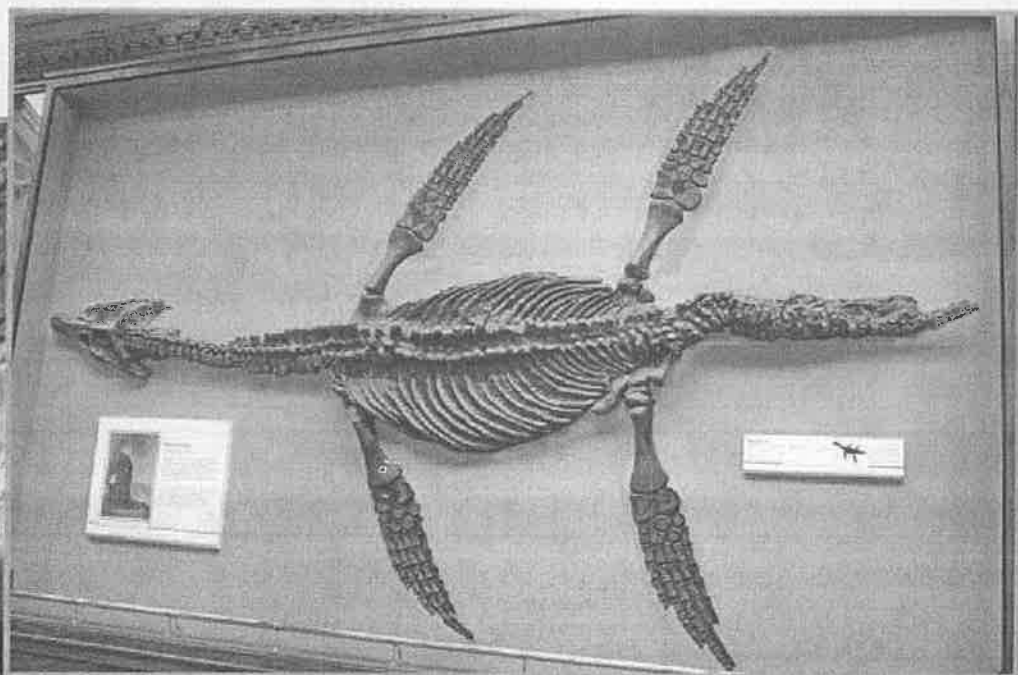
Mary Anning's fossils gave
scientists new knowledge
about the world.



Mary learned her skills as a fossil hunter from her father. He showed her how to increase the value of her finds by cleaning them with a needle and a small brush, then polishing them. After her father died, Mary's sale of her fossil finds helped keep the family going. Her dedication to this work made her famous as an expert on fossils.

Because she was only a young girl, and not a trained scientist, Mary's knowledge of fossils was almost unbelievable to people of her time. One person wrote that Mary had the knowledge to easily talk with "professors and other clever men on the subject, and they all [admit] she understands more of the science than anyone else in the kingdom."

No wonder Mary Anning has been called "the greatest fossilist the world ever knew."



Plesiosaurus fossil

Trapped in Tar!

Walk down a paved black road on a hot summer day and you might find your shoes starting to sink in. That's because high heat makes the road surface soft. If this happens, you are probably walking on asphalt, or tar.

Luckily, you won't sink in very far. But 28,000 years ago, bubbling black asphalt deposits, or tar pits, swallowed up a great many unlucky animals. Possibly thinking they had found water, the mammoths or ground sloths blundered into pits of sticky, gooey tar. Instead of a drink or a bath, a trap held them fast, forever.

These same tar pits still bubble today—in the middle of Los Angeles, California, one of the largest American cities. But what was bad luck for prehistoric animals has meant good luck for paleontologists, scientists who study fossils.

Known as the Rancho La Brea Tar Pits, the bubbling pools of asphalt contain the remains of woolly mammoths, saber-toothed cats, giant sloths, and other now-extinct beasts. This makes the La Brea Tar Pits one of the world's richest sources of fossils.

Lifelike statues at the tar pits make it easy for visitors to imagine a mammoth's deadly dip. ►



◀ This skull of a saber-toothed cat, from the La Brea Tar Pits, is the only one ever found with its mouth closed.

Paleontologists at work at Los Angeles's Page Museum. ▼



The asphalt in these pits has been oozing from the ground for about 40,000 years, and more than three million fossils have been found. In addition to mammoths, tigers, and sloths, paleontologists have found the remains of horses, coyotes, wolves, bison, birds, rodents, and insects, many in perfect condition.

Today, the La Brea Tar Pits are part of Los Angeles's Page Museum, whose current hot spot is Pit 91. Paleontologists keep finding thousands of fossils in this pit under the watchful eyes of visitors.

After seeing complete animal skeletons and learning how the animals became trapped in tar, a visitor to the Rancho La Brea Tar Pits might feel lucky. Those animals met a fate much worse than leaving a shoe print behind on a black-topped road!

JOURNEY OF THE WOOLLY MAMMOTH

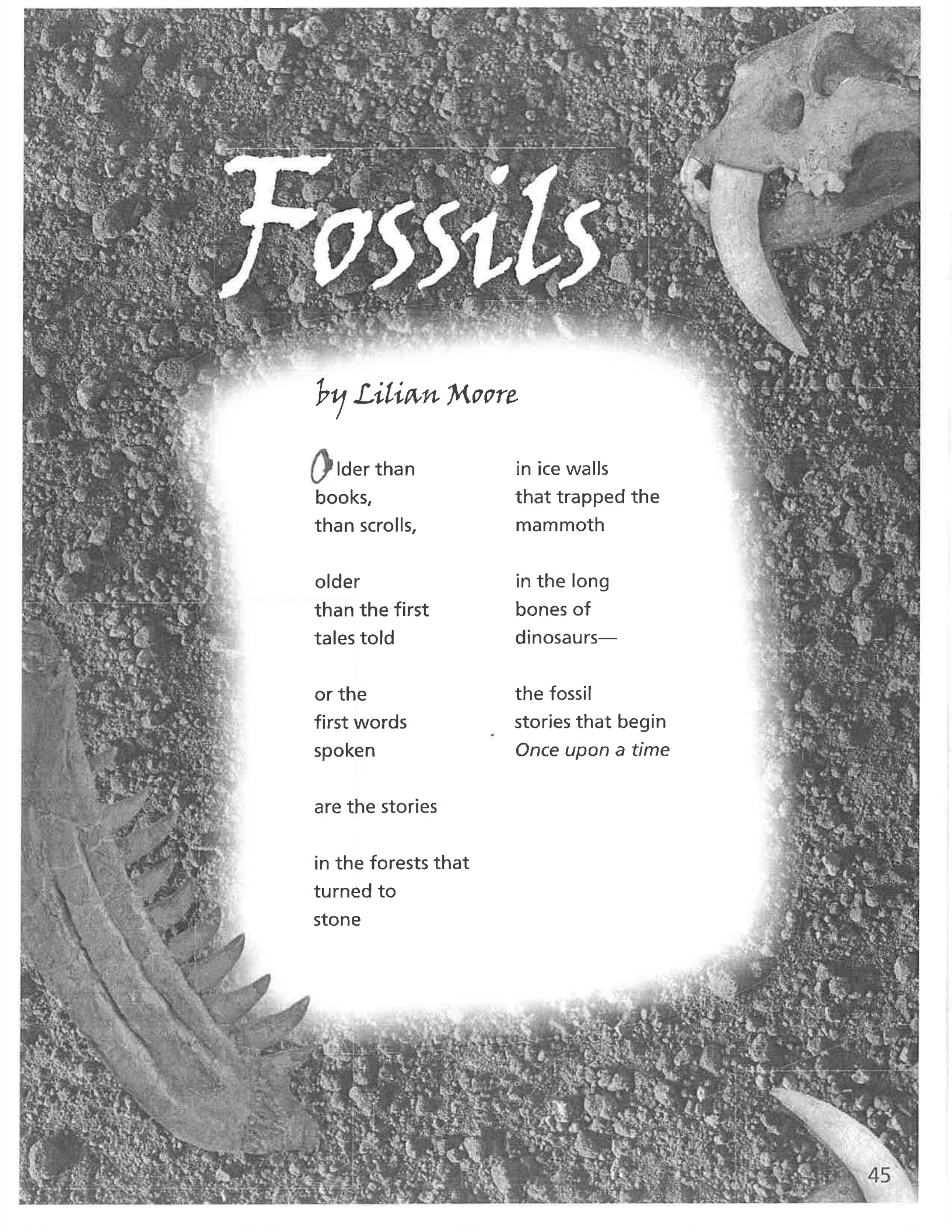
BY MARIA FLEMING

On pillared legs, with tread of thunder,
you trudged across the endless tundra,
a mountain of fur, twin tusks thrust high,
back hunched beneath the weight of the sky.

Until you met some unknown doom,
disappeared into an icy tomb,
a secret buried underground,
ten thousand years lost . . .

Then found.

You walk again inside these walls,
a ghost that haunts museum halls.
Ice Age icon, here enshrined,
once frozen in earth,
now frozen in time.

The background of the page is a dark, textured surface resembling gravel or a rocky ground. In the upper right corner, there is a fossilized skull with a prominent, curved tusk. In the lower left corner, a large, detailed fossil of a trilobite is visible. The title 'Fossils' is written in a large, white, stylized font across the top.

Fossils

by Lilian Moore

Older than
books,
than scrolls,

older
than the first
tales told

or the
first words
spoken

are the stories

in the forests that
turned to
stone

in ice walls
that trapped the
mammoth

in the long
bones of
dinosaurs—

the fossil
stories that begin
Once upon a time

DOUBLE MEANINGS

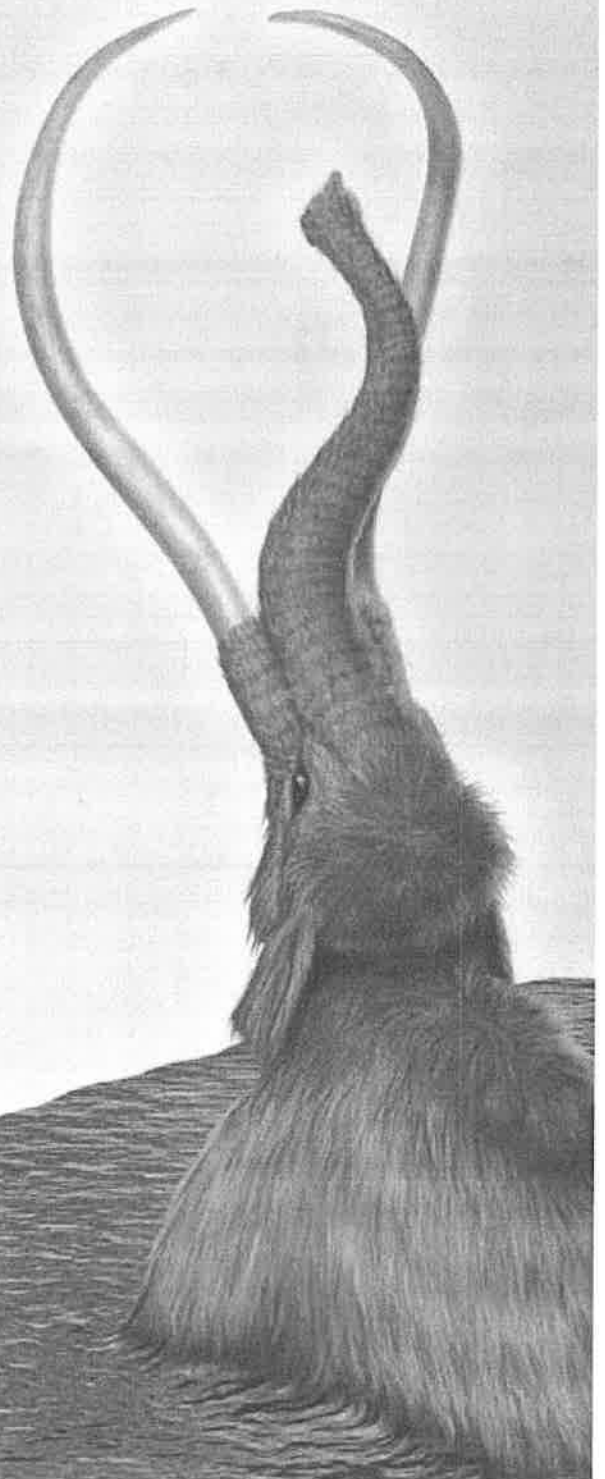
Quick—what's a fossil? Is it A: the preserved evidence of a prehistoric plant or animal; or B: someone who has very old-fashioned ideas? Surprise—it's both!

Meaning A is *fossil's* denotation, its factual meaning. Meaning B is its connotation, or an idea that is suggested by the word. Understanding the context of a sentence containing a word with multiple meanings can help you clarify what the word means.

Read the sentences below. Use the context of each sentence to help you decide if its meaning is a denotation (D) or connotation (C).

1. This mammoth's woolly hair is covered in tar. ?
2. Its thinking is confused and woolly. ?
3. How did it get into this sticky situation? ?
4. It is trapped in a pool of sticky asphalt. ?
5. The mammoth is in a pit of despair. ?
6. It never should have blundered into the pit. ?

Challenge: Make up two more sentences with multiple meanings for the words *wild* and *sharp*.



Prove It!

Half of these statements about fossils are facts. The others are opinions. Take turns reading the statements with a partner. Which are facts and which are opinions?



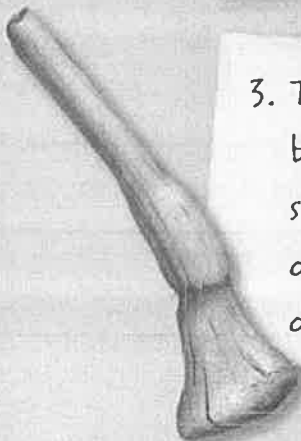
1. This shell fossil was found in Ithaca, New York.

- ☐ Fact
- ☐ Opinion



2. It would not be a good idea to try to saw petrified wood.

- ☐ Fact
- ☐ Opinion



3. This appears to be the bone of a stegosaurus.

- ☐ Fact
- ☐ Opinion



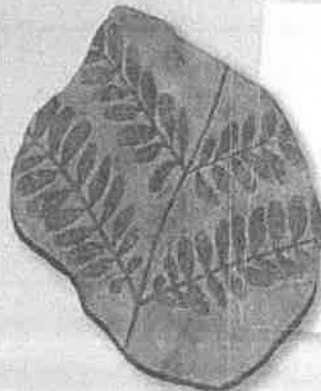
4. This ammonite fossil shows its coiled shape.

- ☐ Fact
- ☐ Opinion



5. This is the footprint of a terrifying dinosaur.

- ☐ Fact
- ☐ Opinion



6. This fern fossil has four fronds.

- ☐ Fact
- ☐ Opinion

YOUR OPINION COUNTS!

Fairbanks, Alaska

10-year-old Boy Finds 10,000-year-old Tooth!



Newspapers all over the world publish letters from their readers. People often write to offer their opinions about something they've read in the news.

You've read about Jared Post, who found the woolly mammoth tooth in Fairbanks, Alaska. After showing the tooth to scientists, Jared was unsure about whether he would keep it or not.

Suppose you read the story about Jared in a Fairbanks newspaper.

Write a letter to the newspaper telling whether you think Jared should keep the tooth or donate it to a museum—and why you think so. If he keeps the tooth, what should he do with it? If he gives it up, who should get it, and why? Include facts, but focus on your opinion. Explain your reasons for your point of view. If you write a strong, persuasive letter, you might even change someone else's opinion—with help from the tips below.

Tips from the Experts

Do you want to get your letter to the editor published? Here are some pointers.

- **Be Brief.** Get right to the point.
- **Be Accurate.** Check your facts.
- **Be Polite.** Avoid insults.
- **Be Professional.** Remember to sign your letter. Include your name, address, and telephone number. If you e-mail your letter, be sure to include your full name, city, and state.
- **Be Patient.** If at first you don't succeed, keep trying.

