

Vocabulary in Context

1

fossils

This man has found dinosaur **fossils**. He will learn a lot from the old bones.



2

clues

Fossils give **clues** that help scientists solve mysteries about dinosaurs.



LANGUAGE DETECTIVE

Talk About the Writer's Words

Work with a partner. Use the blue Vocabulary words in new sentences that tell about the photos. Write the sentences.

3

remains

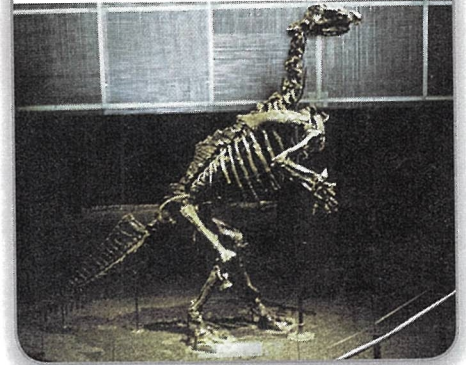
These are the **remains** of a large dinosaur. One bone is all that is left.



4

prove

Scientists are trying to **prove**, or show, that dinosaurs and birds are related.



- ▶ Study each **Context Card**.
- ▶ Ask a question that uses one of the Vocabulary words.

5 **evidence**

Egg fossils give **evidence**, or facts, about how dinosaurs raised their young.



6 **skeletons**

Scientists rarely find whole dinosaur **skeletons** like this one.



7 **uncovering**

Uncovering fossils takes time. The soil must be removed from around them.



8 **buried**

Many dinosaur bones were **buried**, or covered, in mud.



9 **fierce**

Many people think of dinosaurs as **fierce** animals that fought all the time.



10 **location**

Sometimes many dinosaur bones are found in the same **location**.

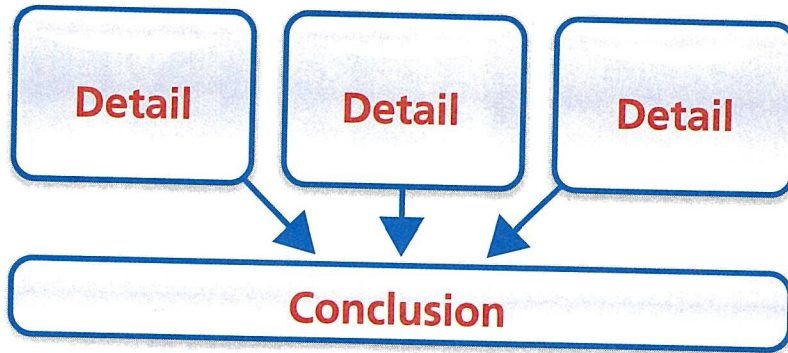




Read and Comprehend

✓ TARGET SKILL

Conclusions As you read *The Albertosaurus Mystery*, look for clues, or text evidence, that can help you understand the topic. You can use this text evidence along with your own ideas to make smart guesses about the topic that the author does not state. When you do this, you are drawing **conclusions**. Use a graphic organizer like this one to list text details that help you reach conclusions.



✓ TARGET STRATEGY

Visualize As you read *The Albertosaurus Mystery*, pay close attention to text evidence that helps you **visualize**, or create mental pictures of, what the author describes.

PREVIEW THE TOPIC

Fossils

Our world is full of mysteries. Earth science, or the study of the earth, helps explain some of these mysteries. For example, studying the earth has led scientists to fossils. Fossils are hints of plants or animals that have lived a very long time ago. A fossil can show the shape of a leaf, or it can be a bone that has turned into stone.

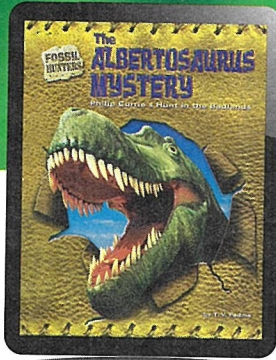
When scientists find fossils, they may or may not know what the ancient living plant or animal was. Sometimes a fossil is a clue in a new mystery. In *The Albertosaurus Mystery*, you'll see how scientists used fossils to answer an important question about how dinosaurs lived.



Talk About It

What do you know about the things scientists have learned about the Earth by studying fossils? What would you like to know? Share your ideas with your classmates. What did you learn from others? Listen carefully to others and take turns speaking.

ANCHOR TEXT



MEET THE AUTHOR

T. V. PADMA



T. V. Padma, whose full name is Dr. Padma Venkatraman, has a lot of different interests. She loves science, math, nature, animals, space, the ocean, fossils, music, history, and poetry. Padma was born in India. She lives in Rhode Island now, where she enjoys canoeing, hiking, and horseback riding.

✓ GENRE

Informational text gives information about a topic. As you read, look for:

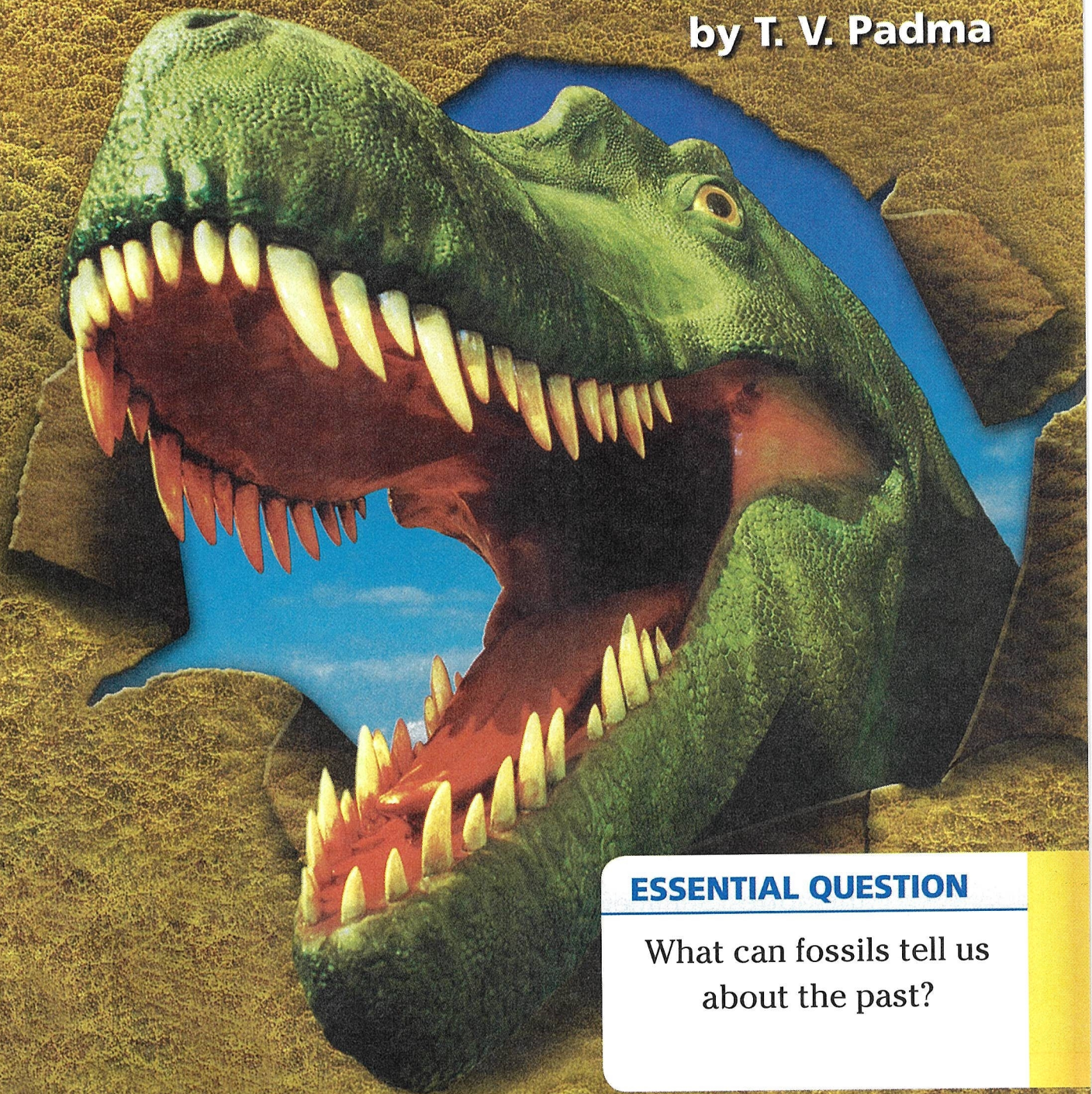
- ▶ headings that tell what each section is about
- ▶ photographs and captions
- ▶ graphics such as maps that help explain the topic

**FOSSIL
HUNTERS**

The **ALBERTOSAURUS MYSTERY**

Philip Currie's Hunt in the Badlands

by T. V. Padma



ESSENTIAL QUESTION

What can fossils tell us about the past?

Searching Without a Map



Many fossils are buried in Canada's badlands. More than 40 kinds of dinosaurs once lived there.

Philip Currie was thirsty and tired. It was one of the hottest summer days of 1997. He and his team were looking for **fossils** that belonged to a dinosaur called *Albertosaurus* (al bur toh SOHR uhs).



The badlands of western Canada are full of hills. Philip didn't know which hill held Brown's fossils.

Almost 90 years earlier, a famous fossil hunter named Barnum Brown had found a fossil field in western Canada's badlands. Many albertosaurs were buried in it. Philip was trying to find this place again.

It was like looking for a needle in a haystack. Brown had not made a map or written down where he had found the fossils. Philip had few clues—just some notes and four old photos.

Discovery!

The team was running out of water. Everyone except Philip went back to the camp. He continued on with the search. Sand flies and mosquitoes bit him. His head hurt.

Philip had seen the **remains** of Brown's campsite earlier in the day. He knew the bones must be close.

Philip was trying to find the **location** of *Albertosaurus* fossils shown in Brown's old photograph.



All alone, Philip climbed another hill. He stopped to hold up a photo. It looked just like the scene in front of him. He also could see that years ago someone had dug into the rock there. Philip had found Brown's bone bed!

Brown's photo was old, but Philip could see that the hills still looked the same.

Holes or cuts in rocky hills are clues that someone might have dug there before.



Barnum the Bone Hunter

Barnum Brown grew up in Kansas in the late 1800s. His family dug and sold coal. Young Barnum saw his first fossil when the family plow accidentally pulled one out of the ground.

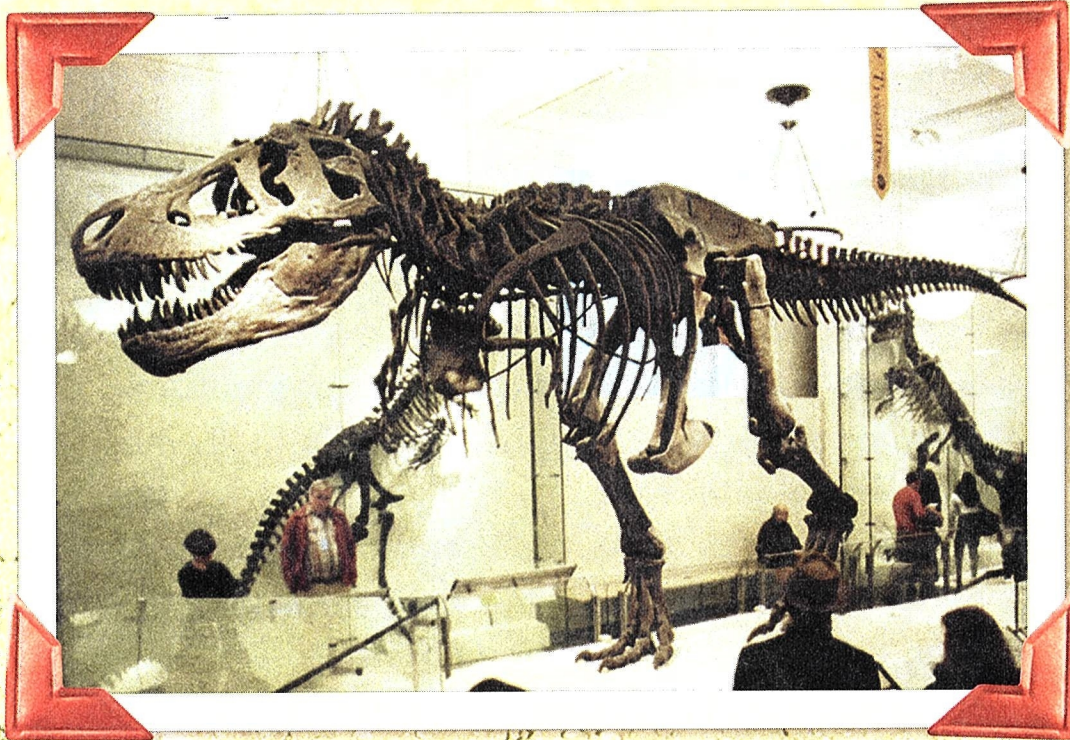
Brown went on to study fossils. He found that he liked digging up bones more than learning about them in class. So he left Columbia University to become a bone hunter for the American Museum of Natural History in New York City.

Brown was very good at finding fossils. Henry Fairfield Osborn, the head of the museum, joked that Brown could “smell fossils.” News writers called him “Mr. Bones.”

At the American Museum of Natural History in New York City, Brown helped put together the bones he found.



Finding the First T. rex



In 1908, Brown found this *T. rex* skeleton. It can be seen at the American Museum of Natural History.

In the early 1900s, Brown dug up *Tyrannosaurus rex* (tuh ran uh SOHR uhs REKS) skeletons, first in Wyoming, and later in Montana. These were the first *T. rex* skeletons ever found.

For several years, Brown returned to Montana to dig for fossils. The bones he found there were often stuck in hard rock. He sometimes used dynamite to get them out.

Then in 1910 a terrible thing happened in Brown's life. His wife died. Brown tried to forget his sadness by hunting for more fossils. He rafted down Red Deer River Canyon in Canada. He camped in the area, and looked for bones. Soon, Brown made a surprising discovery.

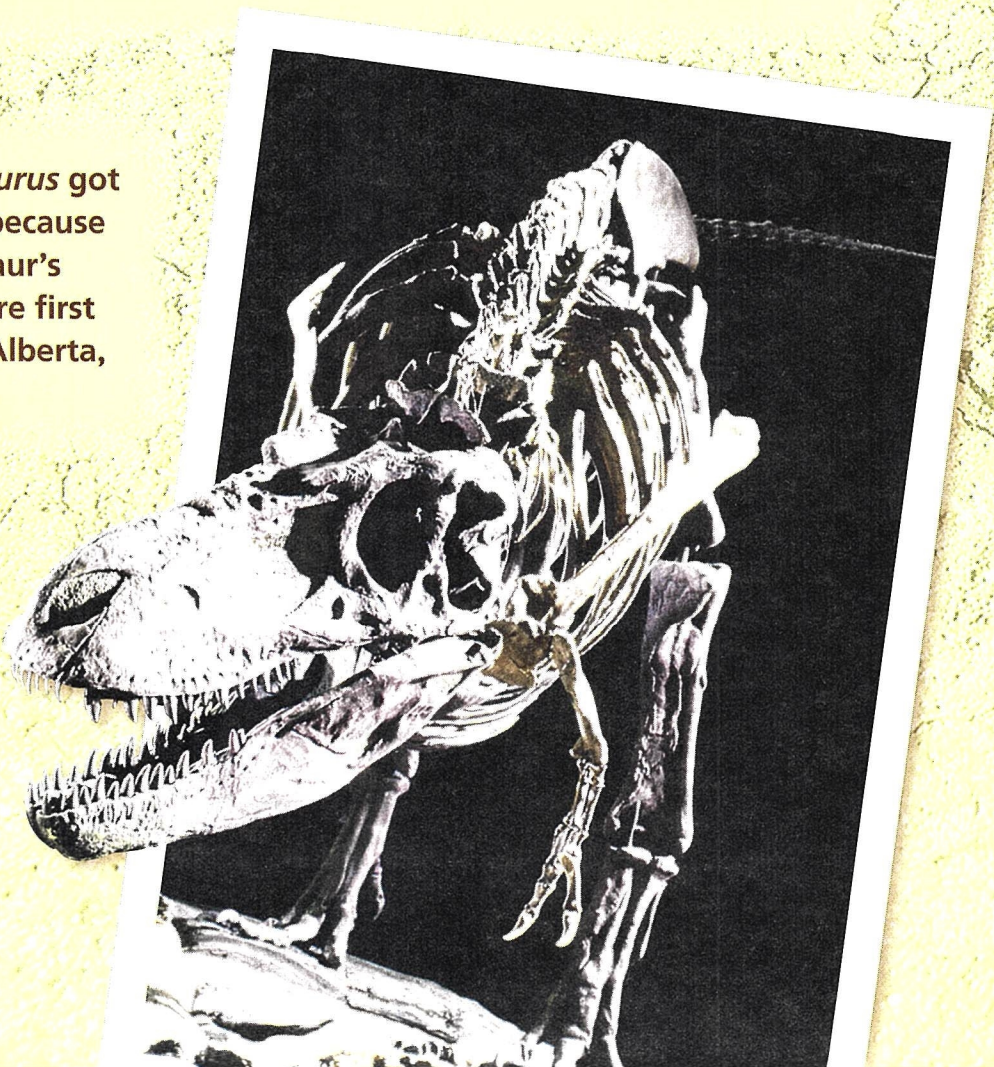
Finding Many Meat-Eaters

In Canada, Brown found a place where many skeletons were buried. The skeletons belonged to *Albertosaurus*, a large meat-eating dinosaur. It was the first time anyone had found the bones of so many meat-eating dinosaurs in the same spot.

Brown dug up some of the bones. He wrote only a few lines about his find but didn't say how unusual it was. He didn't say why he thought so many individuals of the same species were together. He didn't tell what this discovery might mean.

The *Albertosaurus* bones were sent to the museum and put away. There they lay in a basement storage room for many years with other dinosaur fossils.

Albertosaurus got its name because the dinosaur's fossils were first found in Alberta, Canada.



A Fierce Family

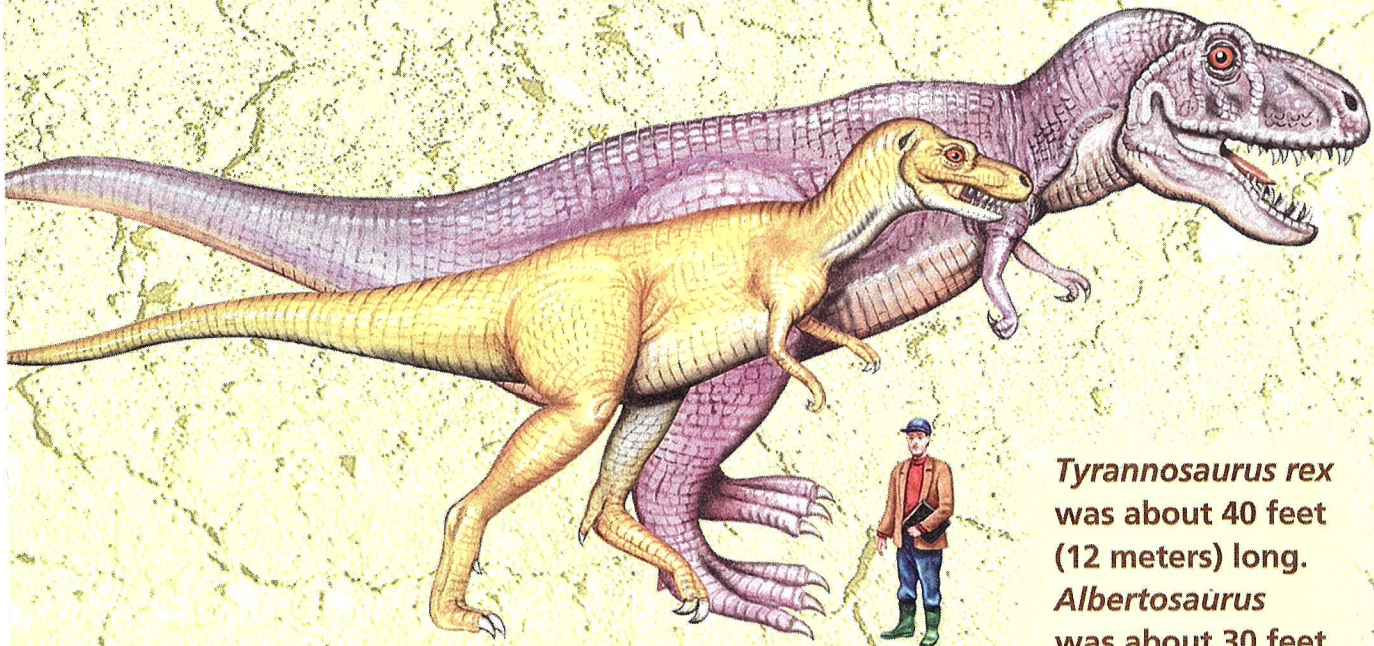
Albertosaurus was part of a family of fierce, meat-eating dinosaurs called tyrannosaurids. *Tyrannosaurus rex* was also part of this family.

Albertosaurus was smaller than *Tyrannosaurus rex*, but it was strong. *Albertosaurus* could see and smell well. It had many sharp teeth. Its huge, powerful jaws could crush bone.

Like *Tyrannosaurus rex*, *Albertosaurus* lived and hunted alone. At least, that's what paleontologists thought. One man was about to change their thinking, however. He had some ideas about these ancient creatures.

ANALYZE THE TEXT

Point of View What does the author think about the bones that Barnum Brown found? What do you think?



Tyrannosaurus rex was about 40 feet (12 meters) long. *Albertosaurus* was about 30 feet (9 meters) long.

Philip Currie's Question

In 1976, Philip Currie read what Brown wrote about the site full of albertosaurs. At that time, most paleontologists thought tyrannosaurids lived alone. If so, asked Philip, why were many of these animals buried together? Had they died together? Had they lived together?

Some plant-eating dinosaurs had lived in groups. Maybe some of the meat-eaters that hunted them did, too, thought Philip. After all, big groups of animals were hard to hunt alone. Maybe albertosaurs hunted in packs.

Philip was busy learning about many kinds of fossils and dinosaurs, however. He put his questions away for many years, just as Brown had put away his fossils.

Albertosaurus had about seventy teeth in its gigantic jaws.



The Bones in the Basement



◀ The American Museum of Natural History, where Brown's *Albertosaurus* fossils were stored.

This fossil foot bone from an *Albertosaurus* was first discovered by Barnum Brown in Alberta, Canada, and then rediscovered by Philip Currie in New York City. ▶

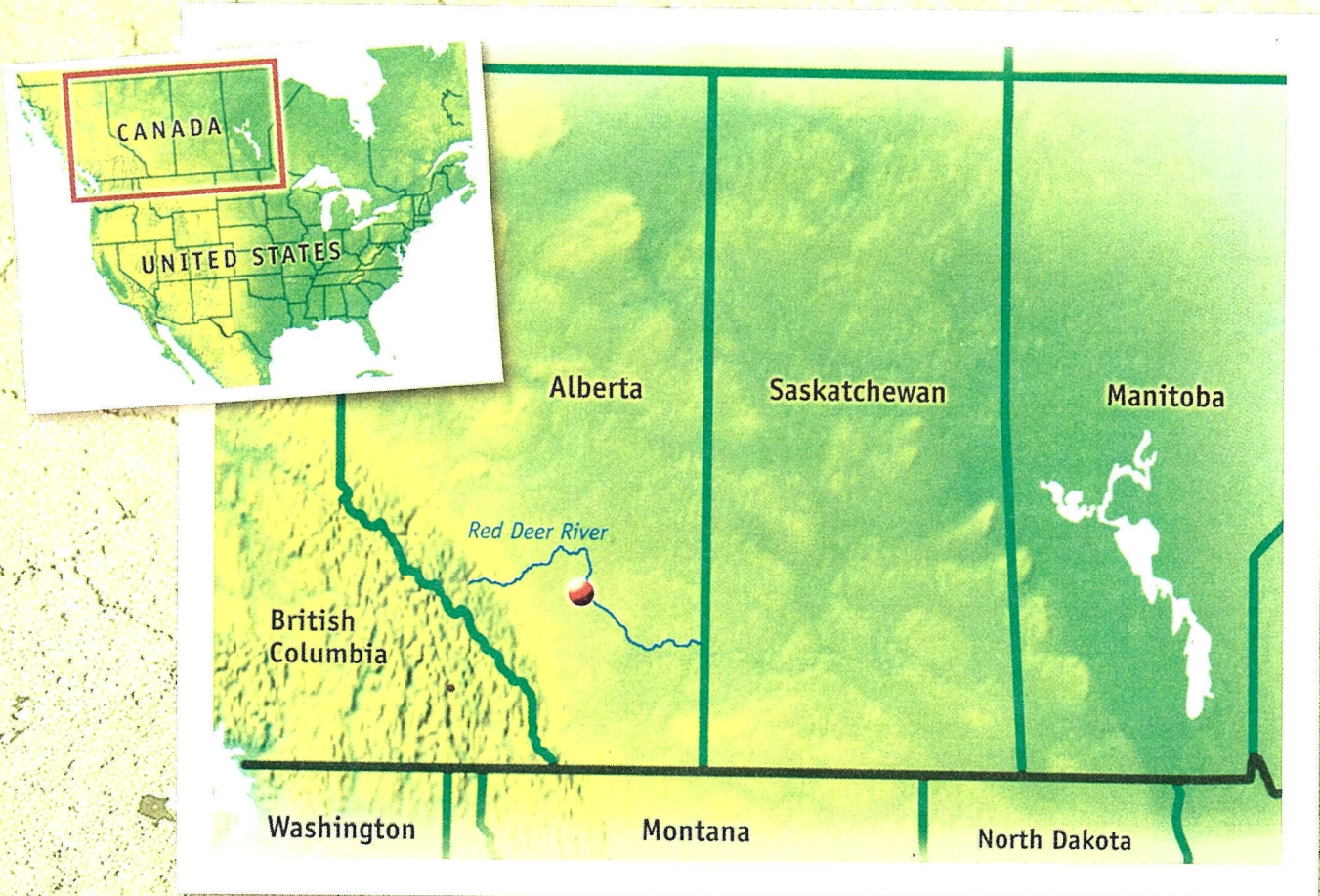


Philip thought about his questions again 20 years later. This time, however, something happened that made him hunt for answers.

Philip came across some *Albertosaurus* bones in the basement of the American Museum of Natural History—the museum where Barnum Brown had worked. He could tell that the bones were from the badlands in Canada where Brown had been searching for fossils.

Philip saw that Brown had found at least nine albertosaurs in one spot. He also saw that Brown had taken only a few bones from each animal. More bones were still buried in the badlands, waiting to be discovered.

The Bones in the Badlands



Place where Philip rediscovered the *Albertosaurus* fossil site first found by Barnum Brown

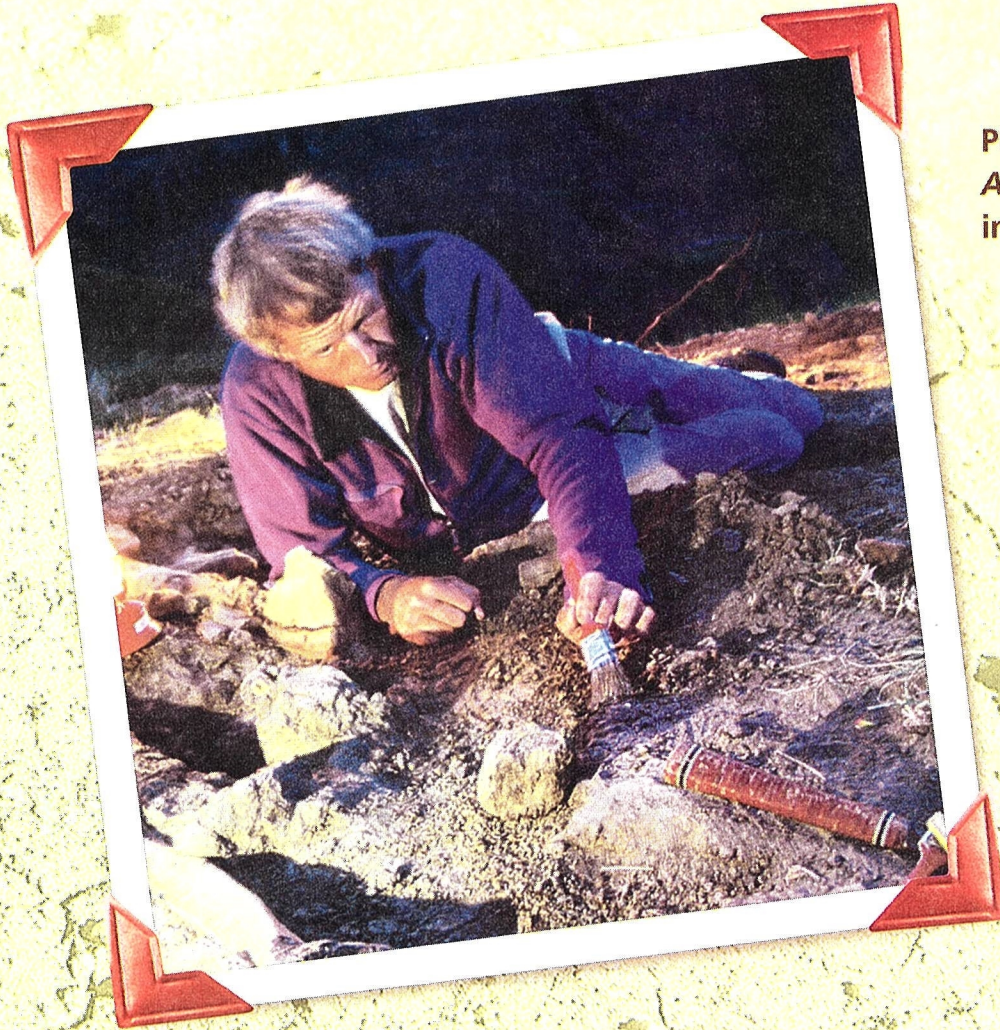
Philip discovered more than bones at the museum. He also found Brown's field notes and a photo of Brown's site. Using these clues, Philip was able to find the bone bed.

ANALYZE THE TEXT

Conclusions Why did finding so many albertosaur fossils in one place make the team question whether albertosaurs had lived alone?

Locating the spot was just the first step, however. Philip and his team worked for months to dig out each fossil. At least 22 albertosaurs were buried in the rock.

After the work was done, a new question came up. Did finding many fossils together **prove** that the animals had lived, died, and even hunted as a group?



Philip **uncovering**
Albertosaurus bones
in the badlands

In the days of Barnum Brown, fossil hunters were not always able to keep good records. Today, paleontologists carefully record their finds with photographs, drawings, maps, and reports.

What May Have Happened

Philip knew there could be other reasons for the fossils being together. Many of these ideas only brought up more questions, however.

For example, the albertosaurs could have died in quicksand. Yet different kinds of dinosaurs could die in quicksand. Philip had found the fossils of only one kind—*Albertosaurus*.

Maybe the albertosaurs had gathered to lay eggs. If so, however, the fossils should have been about the same age and size. Yet Philip had found small, young animals as well as large, old animals.

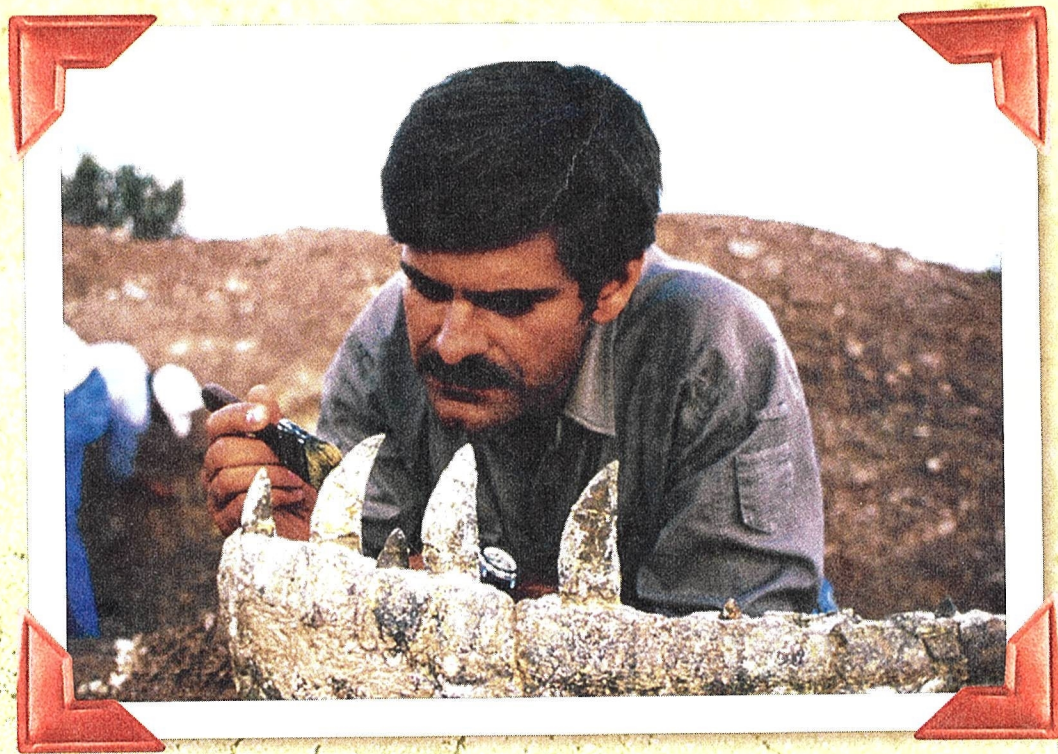
Philip's hunt had ended. Yet he needed more **evidence** to show that the meat-eaters had lived together.

A reconstructed nest of fossilized dinosaur eggs

Scientists know that dinosaurs laid eggs because fossil eggs of several kinds of dinosaurs have been found.



More Groups of Meat-Eaters



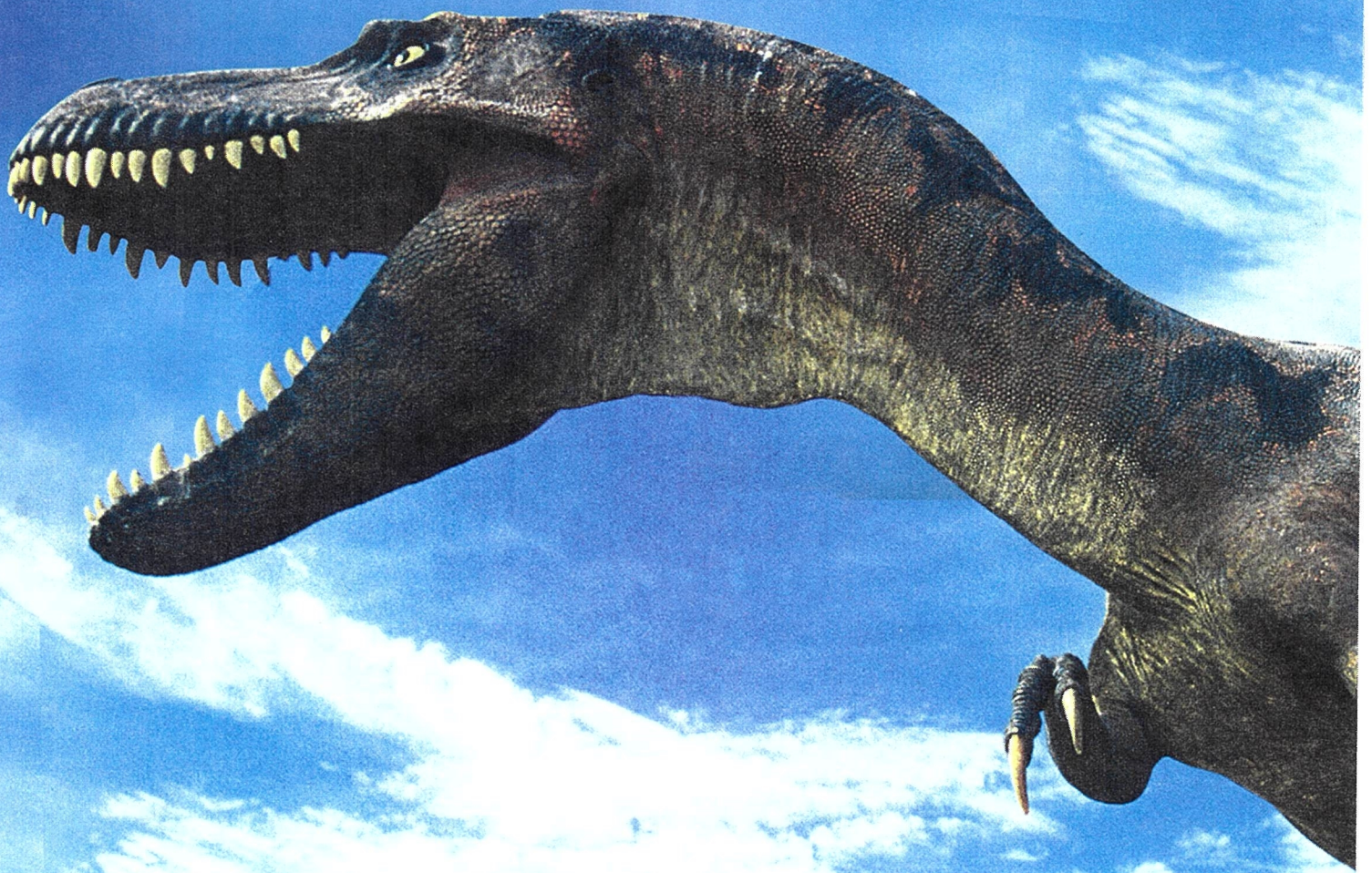
Rodolfo Coria uncovers teeth on a huge dinosaur jawbone.

More evidence came when a paleontologist named Rodolfo Coria phoned Philip. Coria was calling from Argentina. He also had found a spot where a group of meat-eating dinosaurs was buried. So perhaps meat-eaters did live in groups after all.

Scientists found more places with groups of meat-eating dinosaurs. These places were all over—Arizona, Montana, South Dakota, Utah, Mongolia, and Zimbabwe.

Philip also looked carefully at the footprints of meat-eating dinosaurs in the Peace River Canyon of Canada. The footprints showed that meat-eating dinosaurs may have traveled together.

By studying fossils, experts can create models like this life-size *Albertosaurus*.



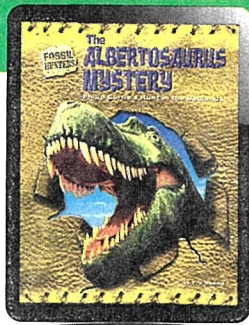


Digging Deeper

Did some meat-eating dinosaurs spend time living and hunting together? Scientists still aren't sure. They can only make smart guesses based on the fossils they have found.

Other questions are still unanswered as well. Why did the albertosaurs at Brown's site die? What killed so many animals at one time? A big storm? A forest fire?

Philip Currie says that a paleontologist is like a detective. The mysterious death happened millions of years ago. No one saw it. Using clues, the scientist tries to tell what happened, how, and why. As long as there are fossils waiting to be found, the investigation continues.



Dig Deeper

Use Clues to Analyze the Text

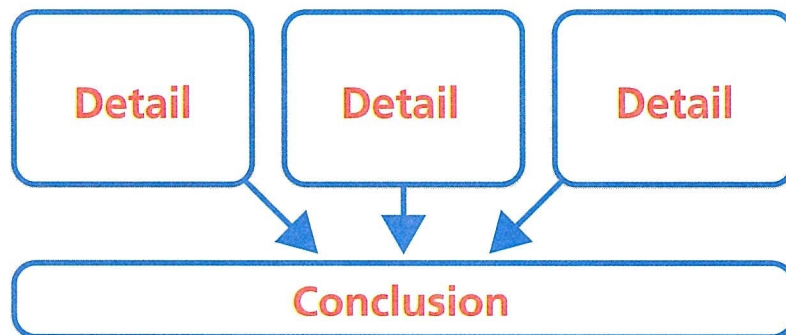
Use these pages to learn about Conclusions and Point of View. Then read *The Albertosaurus Mystery* again to apply what you learned.

Conclusions

Informational texts like *The Albertosaurus Mystery* give many facts and details about a topic. You can use this text evidence along with your own ideas to make smart guesses about things the author does not say. This is called drawing **conclusions**.

Sometimes headings and signal words such as *so* and *therefore* are clues to help you draw conclusions.

Look back at pages 60 and 61. This is the beginning of the selection, but you can already tell that Philip Currie has a difficult job. There are details in the text, but also look at the section heading. Combine the text evidence with what you already know to draw conclusions.



Point of View

An author has a **point of view** about his or her subject. The point of view is the author's opinion. Readers can also have a point of view about the author's subject. You may see a subject from the same point of view as the author. If so, you agree with what was written. Sometimes, you may have a different point of view.

For example, the author describes how hard Philip Currie worked to find Barnum Brown's bone bed. Her point of view is that Currie is determined. Is your point of view the same? If not, why?



Your Turn

RETURN TO THE ESSENTIAL QUESTION



Review the selection with a partner to prepare

to discuss this question: *What can fossils tell us about the past?* As you discuss the question, take turns reviewing and explaining key ideas. Use text evidence to support your ideas.



Classroom Conversation

Continue your discussion of *The Albertosaurus Mystery*. Use text evidence to explain your answers to these questions:

- 1 How did Barnum Brown's old photo help Philip Currie find the bone bed?
- 2 Do you think that the fossils found so far have solved the mystery about meat-eating dinosaurs? Why or why not?
- 3 What text evidence might help answer the questions that Philip Currie still has?

Performance Task

WRITE ABOUT READING



Response Philip Currie found Barnum Brown's bone bed after the rest of the team had gone back to camp. What do you think might have happened if Philip had returned with the rest of his team? Would he have found the bone bed? Use text evidence to support your answer.

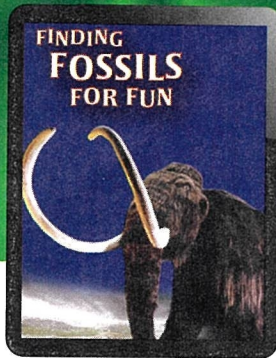


Writing Tip

As you write, check that you use the correct verb tense to tell about action that happened in the past.

Lesson 17

INFORMATIONAL TEXT



✓ GENRE

Informational text gives factual information about a topic.

✓ TEXT FOCUS

A **chart** is a drawing that lists information in a way that makes it clear and easy to understand.

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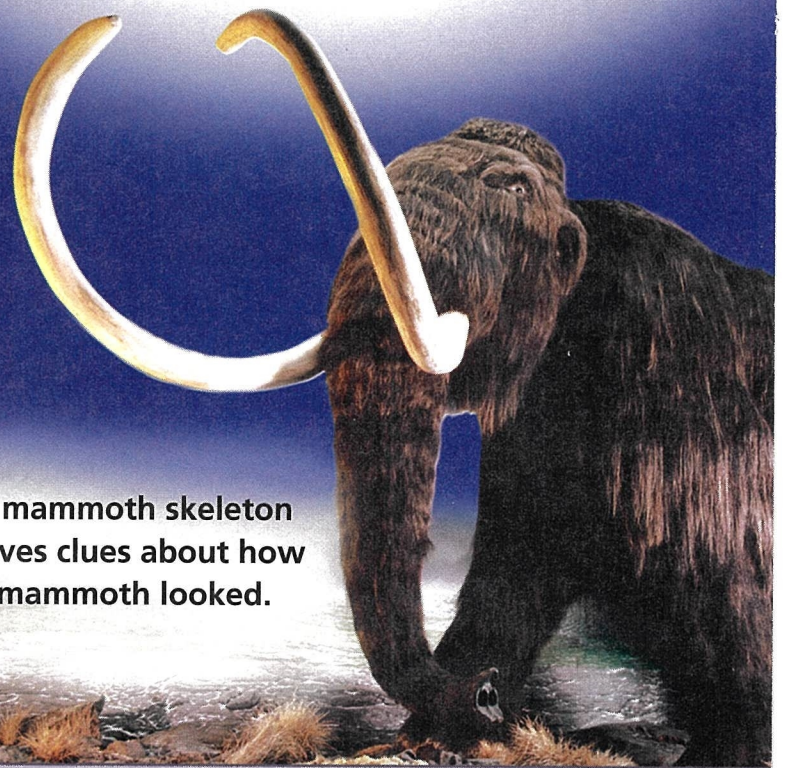


▶ FINDING FOSSILS FOR FUN

by ALICE CARY

Have you ever hunted for fossils? People often find them by accident. In 2007, a Florida high school student and her friends went to a creek to take photos for a school project. They saw lots of bones in the water. The girls were surprised! They had found the remains of an Ice Age mammoth.

Scientists began digging at the creek. Soon they were uncovering other animal skeletons.



A mammoth skeleton gives clues about how a mammoth looked.



Fossils

Fossils are evidence of ancient life. Sometimes dirt or sand covers leaves and bones. Layers of dirt and sand protect these remains from damage. The layers build up as time passes. After many years, the remains harden and become fossils.

You may find fossils buried near you! The chart gives you tips for hunting them.



Hunting Guide

Where to Look	What to Hunt	Tools	Searching Tips
layers of rock	eggs, nests	hammer and chisel	Work carefully so you don't miss anything.
layers of sand or mud	footprints, leaf impressions	notebook, pen, camera	Take notes to keep track of where each discovery was found.
deserts, canyons, cliffs, hills, and mountains	shells	plastic box or newspapers and rubber bands for carrying finds	Look for things that seem unusual or out of place.



Anyone Can Find Fossils!

You're never too young to find fossils. David Shiffler loved fierce dinosaurs. In 1995, when he was only three years old, David dug up a green rock. He called it a dinosaur egg.

David's father took the rock to a museum a few months later. David was right! He had found a piece of dinosaur egg! Scientists could prove it. The egg was about 150 million years old!

Hunt Fossils Safely

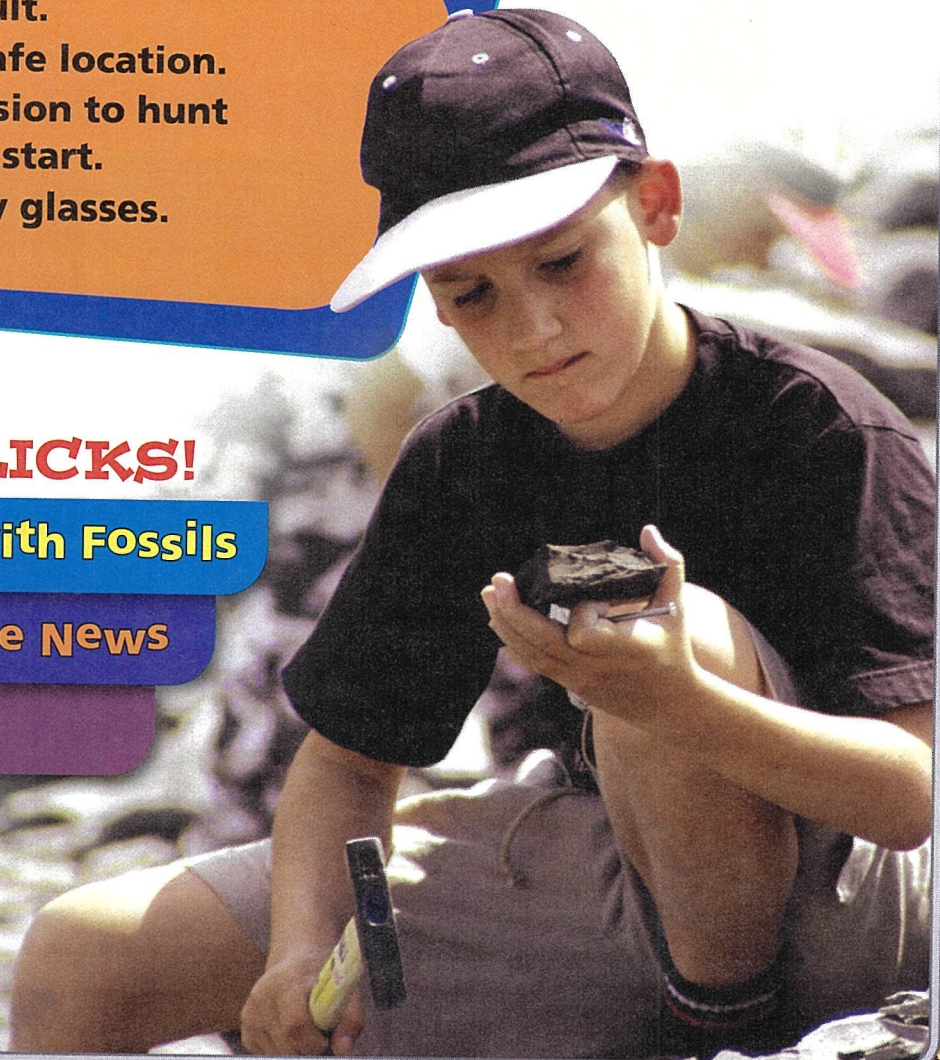
- ▶ Take an adult.
- ▶ Choose a safe location.
- ▶ Get permission to hunt before you start.
- ▶ Wear safety glasses.

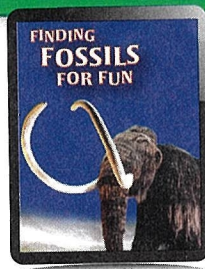
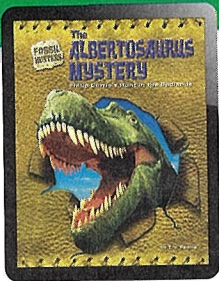
COOL CLICKS!

Museums with Fossils

Fossils in the News

Fossil Finds





Compare Texts

TEXT TO TEXT

Compare Methods Think about the fossil-hunting methods in *The Albertosaurus Mystery* and *Finding Fossils for Fun*. Discuss with a partner what the important ideas are in each selection. How are the ideas alike and different? Is there a method described in *Finding Fossils for Fun* that might help scientists find *Albertosaurus* bones?

TEXT TO SELF

Be a Fossil Hunter After reading about people who hunt for fossils, do you think you would like to be a fossil hunter? Write a paragraph explaining why or why not. Include evidence from the text to support your opinion.



TEXT TO WORLD

Tell the Steps With a partner, discuss the steps you would follow on a fossil-hunting trip. Use evidence from *The Albertosaurus Mystery* and *Finding Fossils for Fun*. Be sure to tell the steps in order.



Grammar

Adjectives That Compare Use **adjectives** to describe how people, places, or things are alike or different. Some adjectives use different endings to compare nouns.

- Add *-er* to most adjectives to compare two people, places, or things.

Tyrannosaurus rex was **larger** than *Albertosaurus*.

- Add *-est* to most adjectives to compare more than two people, places, or things.




Sam found the **largest** fossil that day.

Try This!

Copy each sentence. Fill in the blank with the correct form of the adjective in parentheses.

- 1 The _____ dinosaur found is *Compsognathus*. (small)
- 2 It was just a bit _____ than a modern chicken. (large)
- 3 *Brachiosaurus* was _____ than a four-story building. (tall)
- 4 The _____ dinosaur found could run at about 40 miles an hour. (fast)

Adjectives add details about people, places, and things. When you write, use adjectives to give readers a good description. Use a comparative adjective, one with *-er*, when you compare two things. Use a superlative adjective, one with *-est*, when you compare more than two things.

Adjectives That Compare		
Adjective	Compare Two	Compare More Than Two
		
loud	louder	loudest
great	greater	greatest
warm	warmer	warmest

Connect Grammar to Writing

As you revise your opinion paragraph, look for adjectives. Make sure that when you compare nouns you use the correct form to match the number of objects.

- ▶ Writing Opinions: Support Your Argument
- ▶ Writing as a Process: Plan and Draft



Opinion Writing

✓ Elaboration The author of *The Albertosaurus Mystery* thinks fossil hunting is exciting. By sharing what really interests her, she gets her readers excited, too. In your **opinion paragraph**, add ideas and details that will support your opinion. Let readers know why you feel as you do. Rick wrote his opinion of studying prehistoric people. Later, he added more details to support his opinion.

Revised Draft

I love learning about prehistoric people. The way scientists study them *like solving a mysterious puzzle.* is ~~interesting~~. Prehistoric people left no books about their lives. They only left objects that give clues. I am also amazed by how they got along without modern inventions. They lived in caves or *Imagine camping out for your whole life!* huts, even in freezing weather.

Writing Checklist

- ✓ Elaboration**
Did I explain my ideas clearly?
- ✓ Purpose**
Did I stay focused on my audience?
- ✓ Organization**
Did I begin by telling my opinion?
- ✓ Evidence**
Did I effectively integrate sources, facts, and details?
- ✓ Conventions**
Do my sentences flow smoothly?
Did I punctuate my sentences correctly?

Amazing People from the Past

by Rick Yoshida

I love learning about prehistoric people. The way scientists study them is like solving a mysterious puzzle. Prehistoric people left no books about their lives. They only left objects that give clues. I am also amazed by how they got along without modern inventions. They lived in caves or huts, even in freezing weather. Imagine camping out for your whole life! They got all their food by hunting or finding plants. Don't you wonder what kids did for fun? There are lots of great facts to learn about prehistoric people.

Reading as a Writer

What reasons support Rick's opinion best? Where can you add more details in your own paper?

I added details that will make my opinion clear. I also used exact adjectives.

