

Muse®

Lost & Found

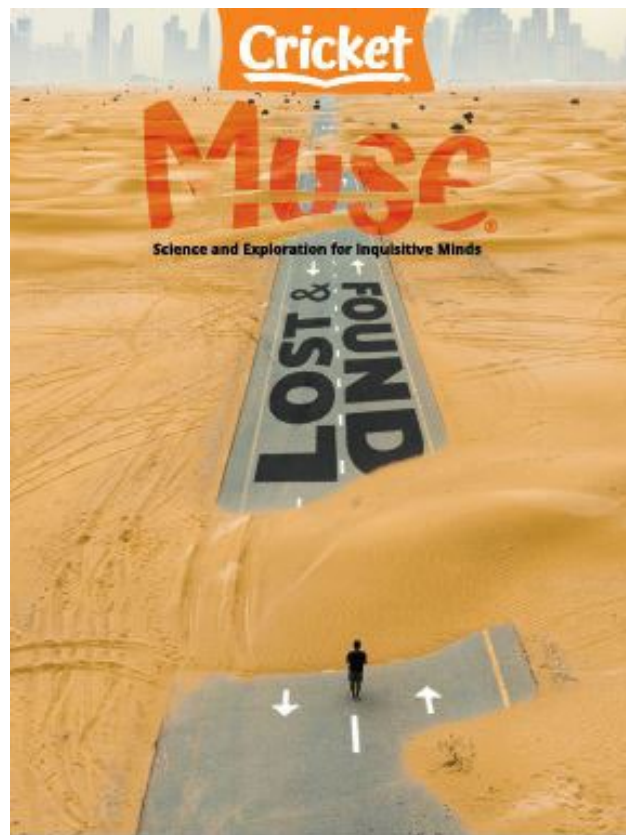
Studying history helps us to develop a better understanding of our world and gives us the tools we need to create a better future. This month's issue of MUSE allows readers to explore the past through the discovery of concrete objects and by examining how the past exists in our mind through memories.

CONVERSATION QUESTION

What is the value of studying the past?

TEACHING OBJECTIVES

- Students will learn how scientists discovered the Sahara Desert's wet past.
- Students will learn why the Pleistocene Epoch is characterized by a mass extinction that wiped out many large animals.
- Students will learn how memories are formed and stored.
- Students will collect evidence to support scientific statements.
- Students will analyze the possible causes for the Pleistocene's mass extinction.
- Students will construct explanations detailing how certain emotions aid in the process of memory.
- Students will create journal entries from the perspective of a paleontologist on an expedition.
- Students will design a brochure to entice travelers to visit the La Brea Tar Pits.
- Students will research and utilize various memory improvement techniques.



In addition to supplemental materials focused on core STEM skills, this flexible teaching tool offers vocabulary-building activities, questions for discussion, and cross-curricular activities.

SELECTIONS

- **When the Sahara Was a Seaway**
Expository Nonfiction, ~1160L
- **From the Pleistocene**
Expository Nonfiction, ~1090L
- **Unforgettable**
Expository Nonfiction, ~1080L

When the Sahara Was a Seaway

pp. 14–17, Expository Nonfiction

The driest place on Earth has a wonderfully wet past. Readers will learn how modern-day scientists use advanced techniques and the discoveries of early European explorers to create an accurate account of the Seaway of the Sahara.



ENGAGE

Conversation Question: What is the value of studying the past?

Explain that “When the Sahara Was a Seaway” tells about a well-explored ancient inland waterway. Display a world map and give students these clues, one at a time, so they can locate this territory:

- It is located in the Northern Hemisphere.
- It is located on the world’s second-largest continent.
- It covers approximately 8% of the earth’s land area.
- It’s bordered in the north by the Mediterranean Sea and the Atlas Mountains, in the east by the Red Sea, in the south by the Sahel, and in the west by the Atlantic Ocean.
- It is currently Earth’s largest hot desert.

INTRODUCE VOCABULARY

Discuss the key vocabulary words and definitions with your students. Ask them to identify what these three words have in common (water). Invite students to share prior knowledge related to these terms. Have students circle other water-related words in the article.

READ & DISCUSS

Reinforce comprehension of the concepts in the article by using the following prompts to direct discussion.

1. Why did early European explorers have a harrowing time trying to explore the Sahara?
2. What did François Élie Roudaire and Ferdinand de Lesseps hope to build? What happened to their plans?
3. What did paleontologist Albert Félix de Lapparent discover during his nine expeditions to the northern Sahara?
4. How did the Trans-Saharan Seaway resemble the Florida Everglades?
5. How do rising/falling sea levels affect the evolution of species?

SKILL FOCUS: Collect Evidence

INSTRUCT: Distribute the *Collecting Evidence: Sahara Seaway* organizer and read aloud the claims on it. Remind students that the article presents information about the seaway that once covered the Sahara Desert. Have students review the article and highlight sentences that provide evidence to support each of the claims listed in the organizer. Then have them record and cite the evidence in the organizer.

ASSESS: Collect and review students’ organizers.

EXTEND

Geology Tell students to imagine they are paleontologists on an expedition to study fossils in the Sahara. Have students use information in the article to help them write five to ten realistic journal entries about the expedition. Explain that entries should include details about the travel, the climate, the fossils found, the process of finding the fossils, the hardships, and the rewards of the expedition.

RESOURCES

Collecting Evidence: Sahara Seaway

OBJECTIVES

- Students will learn how scientists discovered the Sahara Desert’s wet past.
- Students will collect evidence to support scientific statements.
- Students will create journal entries from the perspective of a paleontologist on an expedition.

KEY VOCABULARY

- **wetland (p. 14)** an area of land such as a marsh or swamp that is covered with shallow water
- **channel (p. 15)** a narrow area of the sea between two large areas of land that are close together
- **basin (p. 15)** a depression in the surface of the land or in the ocean floor

Sahara Seaway

Collecting Evidence Gather evidence from the article to support each claim. Include details and cite your findings by using page numbers.

Claim: 100 million years ago, the Sahara hosted a wetland teeming with aquatic life.

Supporting evidence (P. _____)

Claim: The northern Sahara was once an inland sea.

Supporting evidence (P. _____)

Claim: The Trans-Saharan Seaway resembled the environment of the Florida Everglades.

Supporting evidence (P. _____)

From the Pleistocene

pp. 18–21, Expository Nonfiction

Considered a gateway to the past, the La Brea Tar Pits are the world’s only active, urban Ice Age excavation site. Readers will discover how fossils recovered from this location have helped scientists learn about the megafauna of the Pleistocene Epoch.



RESOURCES

Cause and Effect: *Bygone Beasts*

OBJECTIVES

- Students will learn why the Pleistocene Epoch is characterized by a mass extinction that wiped out many large animals.
- Students will analyze the possible causes for the Pleistocene’s mass extinction.
- Students will design a brochure to entice travelers to visit the La Brea Tar Pits.

KEY VOCABULARY

- **megafauna** (p. 19) large or giant animals of a particular region, habitat, or geologic period
- **carnivore** (p. 20) an animal that feeds on the flesh of other animals

ENGAGE

Conversation Question: What is the value of studying the past?

Engage the class by using a simple word-association exercise. Say *Los Angeles* and give students three minutes to jot down the words and ideas that come to mind. Discuss responses, which probably will include references to movie stars, fashion models, glamour, and wealth. Point out that one of the world’s most famous fossil localities, the La Brea Tar Pits, is located in the heart of Los Angeles.

INTRODUCE VOCABULARY

Post and read aloud the key vocabulary words. Explain that many scientific terms contain Greek and Latin roots, affixes, and word parts. Break apart the terms and explain the meanings of the individual parts.

- **mega** = large / **fauna** = animal life
- **carni** = flesh / **vore** = to devour

Have students use the meaning of the parts to write a definition for each word. Then compare these to the Key Vocabulary definitions.

READ & DISCUSS

Post the questions prior to reading. Read the article aloud, pausing when answers are revealed, and encourage students to elaborate.

1. Why are the La Brea Tar Pits referred to as a “graveyard for creatures of a lost age”?
2. How was the world different during the Pleistocene Epoch?
3. Explain how tar pits form.
4. What can scientists learn by excavating the deposits to uncover the animal remains in the tar pits?
5. How do paleontologists catalog the fossils they find?

SKILL FOCUS: Cause and Effect

INSTRUCT: Have students review the article and study the theories surrounding the extinction of the megafauna. Distribute the *Cause and Effect: Bygone Beasts* graphic organizer and tell students they will use information directly from the article to explain the possible causes of the mass extinction during the Pleistocene Epoch. Have students discuss which theory they believe is most plausible.

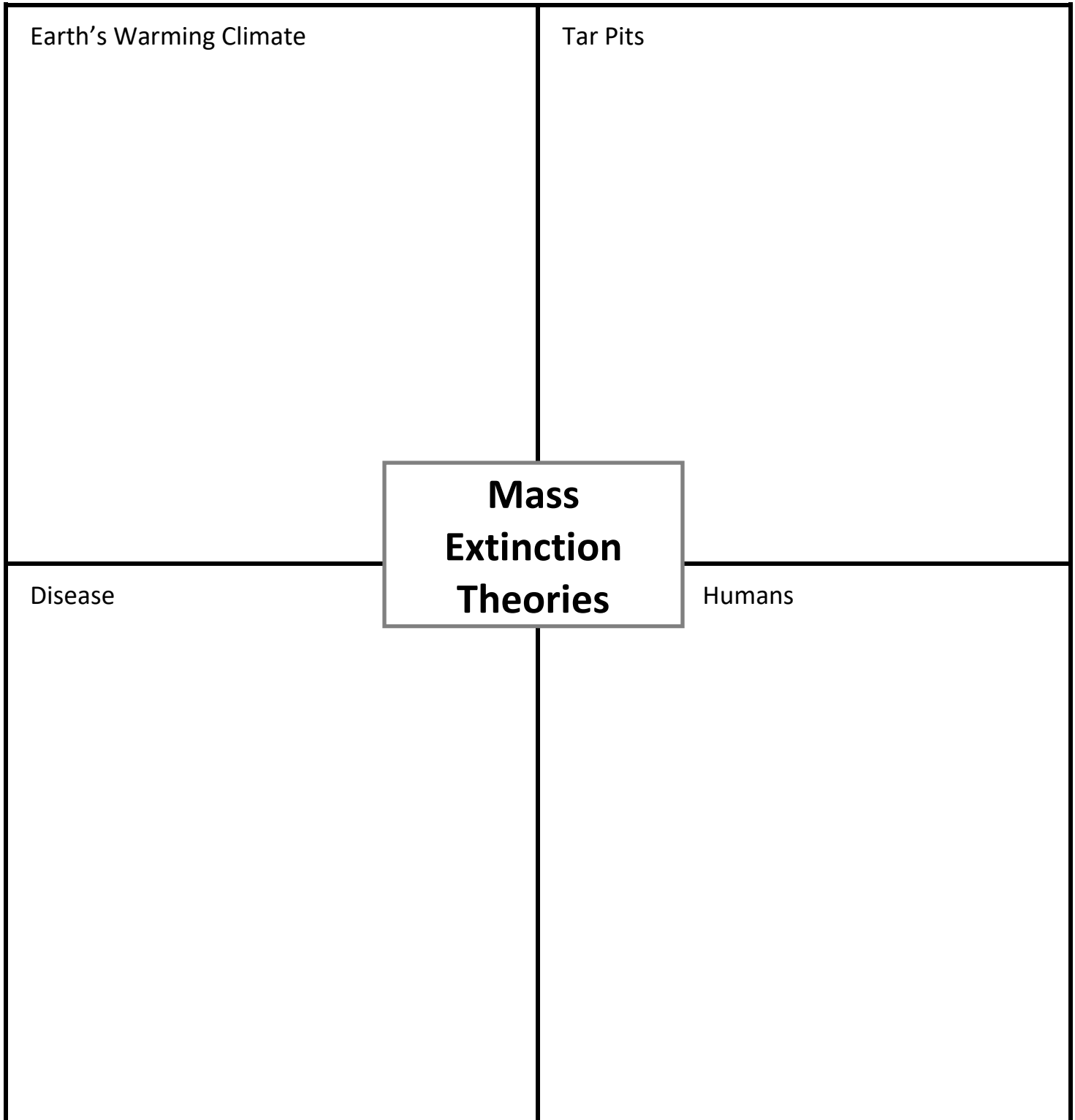
ASSESS: Have students work with a partner to review their organizers. Encourage partners to offer helpful suggestions as they check for accuracy.

EXTEND

Geography Have students use details from the article and other resources to make brochures that will entice travelers to visit the La Brea Tar Pits and Museum. Students should include the following elements in their brochures: location, details about the active paleontological research site, findings, museum exhibits, and colorful photographs or drawings. Have students use a piece of paper folded into thirds or an online brochure template to create their brochures.

Bygone Beasts

Cause and Effect Review the article and highlight information that describes the various theories about the mass extinction of the Pleistocene Epoch. Explain how each element may have caused large beasts to vanish.



Unforgettable

pp. 34–37, Expository Nonfiction

“Where did I put my phone?” is a question people of all ages ask themselves every day. This article examines the factors that affect long- and short-term memory.



RESOURCES

Construct Explanations: Memory Lane

OBJECTIVES

- Students will learn how memories are formed and stored.
- Students will construct explanations detailing how certain emotions aid in the process of memory.
- Students will research and utilize various memory improvement techniques.

KEY VOCABULARY

- **neurons** (p. 35) cells that receive input from the outside world and transmit messages between the brain and other parts of the body; the basic units of the nervous system
- **hyperthymesia** (p. 35) a highly superior autobiographical memory that allows people to accurately remember most of the details of their life

ENGAGE

Conversation Question: What is the value of studying the past?

Invite students to share a recollection of an early memory. Then ask students to share what they learned in class last Friday. Pose these questions: How can it be easier to remember something from long ago than from last week? What are the commonalities among the things remembered from the distant past?

INTRODUCE VOCABULARY

Post and discuss the two vocabulary words and definitions. Have students Think-Pair-Share with a partner. Give them the following brainstorming directives, one at a time:

- Discuss possible benefits and drawbacks of having the condition of **hyperthymesia**.
- What do **neurons** help you to experience? How do **neurons** help you to perform?

READ & DISCUSS

Have students reread the article in small groups and then answer the questions below.

1. What effect does emotion have on memory?
2. Why are most events in our life held in our memory for only a few minutes?
3. How are memories stored in the brain?
4. How are short-term memories formed? How are long-term memories formed?
5. Why are some memories stored for a lifetime?

SKILL FOCUS: Constructing Explanations

INSTRUCT: Students will construct explanations that demonstrate their understanding of the elements that aid in the process of creating long-term memories. Instruct pairs of students to reread the article and discuss relevant content. Distribute the *Construct Explanations: Memory Lane* graphic organizer and have students complete it independently.

ASSESS: Collect the worksheet to assess individual understanding of the topic.

EXTEND

Psychology Point out that having a strong memory helps people do well in school (and in life). Explain that there are several techniques that have been shown to improve memory. Arrange the class into groups of four students and assign each group a different memory technique to research. (Ex: mnemonic devices, imagery associations, storytelling strategies, chunking, peg-word system, etc.) Groups should present their memory technique to the class and explain how it works. Next, give each group the same set of data to memorize. Have each group member use one of the methods to remember the information. Invite students to share which methods were most helpful and why.

Memory Lane

Constructing Explanations Review the article and locate the passages that describe each of the “Emotional Tutors” below. Explain how each element impacts the creation and storage of memories.

Fear	
Novelty	
Reward	