



#3561

AMBER HUNTERS

Grade Levels: 9-13+
30 minutes

AMBROSE VIDEO PUBLISHING 1998

DESCRIPTION

Amber--fossilized tree resin that often captured in its flow some form of life on earth millions of years ago. Prized for its rarity and beauty, amber is also sought by scientists for the potential discoveries of prehistoric life. Follow an amber hunter in a Dominican Republic marketplace and mine as he buys small quantities of this semiprecious jewel. Fellow scientists use modern technology to reveal the secrets of the encased fossil. Perhaps dinosaurs really can live again?

ACADEMIC STANDARDS

Subject Area: Science

- ◆ Standard: Understands basic earth processes
 - Benchmark: Knows processes involved in the rock cycle (e.g., old rocks at the surface gradually weather and form sediments that are buried, then compacted, heated, and often recrystallized into new rock; this new rock is eventually brought to the surface by the forces that drive plate motions and the rock cycle continues) (See Instructional Goal #2)
 - Benchmark: Knows that fossils provide important evidence of how life and environmental conditions have changed on the earth over time (e.g., changes in atmospheric composition, movement of lithospheric plates, impact of an asteroid or comet) (See Instructional Goal #1)
- ◆ Standard: Understands the nature of scientific inquiry
 - Benchmark: Knows that scientists conduct investigations for a variety of reasons (e.g., to discover new aspects of the natural world, to explain recently observed phenomena, to test the conclusions of prior investigations, to test the predictions of current theories) (See Instructional Goals #1, #4)

INSTRUCTIONAL GOALS

1. To examine the role of resin fossils in linking to the past.

2. To detail the process of how amber is formed.
3. To observe how amber is mined.
4. To explain how technology is used to study fossils embedded in amber.

VOCABULARY

1. undertaker
2. curios
3. Hymenaea tree
4. resin
5. gecko lizard
6. morticians
7. primeval
8. stalactite



BEFORE SHOWING

1. Review the geological timeline, especially the Jurassic and Cretaceous periods.
 - a. What was the climate of the earth like during these two periods?
 - b. Which animals lived on earth during this time?
2. Review the movie Jurassic Park.
 - a. Where did the movie take place?
 - b. How did the scientists in the movie clone the dinosaurs?
 - c. How was the mosquito preserved?
 - d. How old were the dinosaurs that lived in the Jurassic period?
 - e. Compare the DNA technology of Jurassic Park with what scientists are able to do today in the lab.
3. Point out Hispaniola, the Dominican Republic, and Santo Domingo on a map.

DURING SHOWING

Discussion Items and Questions

1. View the video more than once, with one showing uninterrupted.
2. Pause after the section showing how amber is formed.
 - a. What species of trees secrete resin?
 - b. How did the resin protect the tree?
 - c. Describe the stages that led to the formation of amber.
3. Pause after the section on La Toca.
 - a. How deep were some of the shafts at the amber mine?
 - b. Describe the conditions of the working in the mines.
 - c. What are some of the dangers?
 - d. In spite of the dangers, the men continue their search for amber. Discuss what motivates them to do this.

4. Pause at the scene showing the gecko lizard embedded in the amber.
 - a. Point out the areas of the spine that are broken.
 - b. Discuss how x-rays and other kinds of technology are useful in helping to identify fossils to learn about the past.
 - c. Compare fossils found in amber with those found in ordinary rocks.

AFTER SHOWING

Discussion Items and Questions

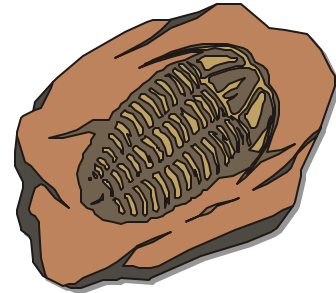
1. Discuss the meanings of the following mentioned in the video:
 - a. Amber is nature's undertaker.
 - b. Amber hunting is high-stakes paleontology.
 - c. This game of bluff and double bluff requires a cool head and a poker face.
 - d. Ancient Egyptian morticians would have been envious of this kind of embalming.
 - e. Harbor a brisk trade in this fossil gold.
2. Discuss the meaning and importance of genetics and scientific evidence in studying life in the past.
3. What color is the rarest and most prized amber?
 - a. How much is it worth?
 - b. How much is a piece of amber with an embedded fossil worth?
4. How many years does it take to create a piece of amber?
5. To what museum in the United States do many amber hunters take their findings?
 - a. Name the man there who is a world authority on amber.
 - b. What kinds of technology does he use in his lab?
 - c. Why does he cut the amber with extreme care?
 - d. Which organisms does this scientist believe are fundamental to the story of life and why?
6. Discuss the difficulty in extracting DNA from an insect embedded in amber.
7. Discuss the importance of studying plant fossils.
 - a. What did the plants of the dinosaur period probably look like?
 - b. What kinds of plants have been found preserved in amber?
 - c. What information have scientists learned from this?



Applications and Activities

1. Create a timeline for the presence of amber within the geological time scale.
2. There are supposedly about 20 locations in the world that produce amber.
 - a. Research these locations and point them out on a map.

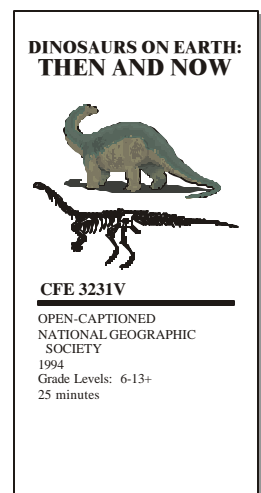
- b. Make a computer-generated table listing the locations and the time periods.
3. Research and report on the following:
 - a. Hymenaea tree
 - b. The value of amber as compared with other stones
 - c. Tests used to check for authenticity of amber
 - d. Classifications of amber
 - e. Care of amber
 - f. Uses of amber
 - g. Unusual finds of fossils embedded in amber
 - h. Mechanics and implications of DNA technology
 - i. Myths and truths about amber
4. Obtain some amber jewelry and list adjectives that describe it.
5. Simulate the process of resin fossilization.
 - a. Obtain some resin or varnish at a paint store.
 - b. Lightly tape a plastic insect on the inside of a glass.
 - c. Pour the resin over the area where the insect is taped and observe how the insect becomes trapped.
 - d. Let the resin dry and describe the amber that has formed around it.
 - e. Repeat using a leaf or a flower.
6. Make a table of the names of different species and the numbers of chromosomes in each.
7. Develop a story about finding a rare specimen embedded in amber. Outline events that can be placed in the rising action, climax, and the falling action.
8. List quotes in literature that use the word "amber":
 - a. Whence we see spiders, flies, or ants entombed and preserved forever in amber, a more than royal tomb. (Bacon)
 - b. An amber scent of odorous perfume. (Milton)
 - c. I saw a flie within a beade of amber cleanly buried. (Herrick)
 - d. Oh, beautiful for spacious skies, for amber waves of grain. (Bates)
 - e. A sloop of amber slips away upon an ether sea. (Dickinson)
9. List works of fiction that have been influenced by scientific theories and technology.
10. Set up a debate on the topic "DNA Regeneration of Species." List the pros and cons of such experimentation.
11. After the showing of the movie Jurassic Park, amber became more popular. List other such influences that the media has had in the past.



RELATED RESOURCES

Captioned Media Program

- Dinosaurs on Earth: Then... and Now #3231
- Dinosaurs! Dinosaurs! #3230



World Wide Web



The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **AMBER: WINDOW TO THE PAST**

<http://www.amnh.org/exhibitions/amber/amber.html>

Includes basic information about amber and its varieties. Viewers can click on different pieces of amber to discover what is inside.

- **WELCOME TO THE WORLD OF AMBER**

<http://www.emporia.edu/earthsci/amber/amber.htm>

Contains topics such as physical properties, geologic occurrences, recovery methods, imitations, and identifications, museums, and references. Also includes an amber quiz.

- **NATURE'S PRESERVATIVE**

<http://whyfiles.news.wisc.edu/008amber/>

Examines the scientific contribution of amber. Includes an amber quiz.

- **THE AMBER ROOM**

<http://home.earthlink.net/~skurth/AMBER.HTM>

Contains images of organisms found in amber deposits in New Jersey.

- **DOMINICAN AMBER FACTS**

<http://www.espd.com/amber/facts.htm>

Lists characteristics of amber found in the Dominican Republic such as color, size, and fluorescence. Includes Java-based video clips of amber fossils as well as a short slide show.