Plate Time Travel

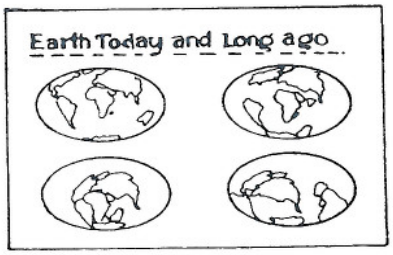

Plate Puzzle Poster

This model demonstrates how all the continents were once joined.

SCIENCE CONCEPTS & OBJECTIVES

- Relate the moving plates to the continents forming one supercontinent millions of years ago
- Infer how fossils, rocks, and glacier marks helped convince scientists that the continents have been moving

VOCABULARY

Pangaea a supercontinent that existed about 240 million years ago

For Your Information

Scientists use the changing positions of the moving plates like a time machine to trace their path over the past hundreds of millions of years. By studying rock formations, fossils, and glacier marks, scientists have evidence that about 240 million years ago all the continents formed one giant supercontinent called Pangaea. About 200 million years ago Pangaea broke apart into pieces, which moved along with their plates. Some pieces broke apart again while others crashed into each other. Eventually Pangaea's pieces became today's continents.

TEACHING WITH THE MODEL

Plate Puzzle Poster

1. Ask students: Is Earth the same today as it was during the dinosaurs' time? *(no)* How was it different then? *(hotter, wetter, different plants, more ocean, and so on)* How do we know that? *(fossils)* What has happened to the continents as the plates have moved for hundreds of millions of years? *(They've spread out.)*
2. Invite students to make the model (see page 119).
3. Have students set their Earth Today and Long Ago mini-posters where they can see and refer to them. Their plate puzzle pieces should be on a sheet of blue construction paper in front of them.

Making the Model

Plate Puzzle Poster

MATERIALS: reproducible pages 122–124 ● crayons, markers, or colored pencils ● scissors ● glue or tape ● blue construction paper

1. Photocopy pages 122–124.
2. Cut out all nine pieces on pages 122–123. Color them, if desired.
3. Arrange the pieces on a sheet of blue construction paper, which represents the ocean.

4. Challenge students to create a map of today with the pieces, using the mini-poster's Today globe as a guide.
5. Explain that the hatched areas are where very old rock formations were found. The dashed areas represent places that have glacier marks on rocks. The animals and plants stand for specific fossils.
6. Challenge students to fit South America next to Africa so the very old rocks join, the glacier marks join, and the fossils link. These were clues that led the scientist Alfred Wegener to theorize that all the continents were once joined together. They formed the supercontinent, Pangaea (pan-GEE-uh), surrounded by one vast ocean called Panthalassa (pan-thuh-LOS-uh). (Pangaea means "all lands," Panthalassa means "all seas.")
7. Next, ask students to try to fit the rest of the pieces together to form a giant continent without looking at the mini-poster. (You might ask them to turn their mini-posters over.) After they've attempted it, allow them to check and correct using the 240 Million Years Ago globe on the mini-poster.
8. The continents were moving along with the plates below them before Pangaea formed and continue to spread today. Allow students to see two interim time periods by forming the 420 Million Years Ago and 65 Million Years Ago continent positions using the mini-poster's globes as guides. Ask: When did the dinosaurs become extinct? *(about 65 million years ago)* Are the continents still moving? *(yes)*

Making the Model

Plate Puzzle Poster

MATERIALS: reproducible pages 122–124 ○ crayons, markers, or colored pencils ○ scissors ○ glue or tape ○ blue construction paper

1. Photocopy pages 122–124.
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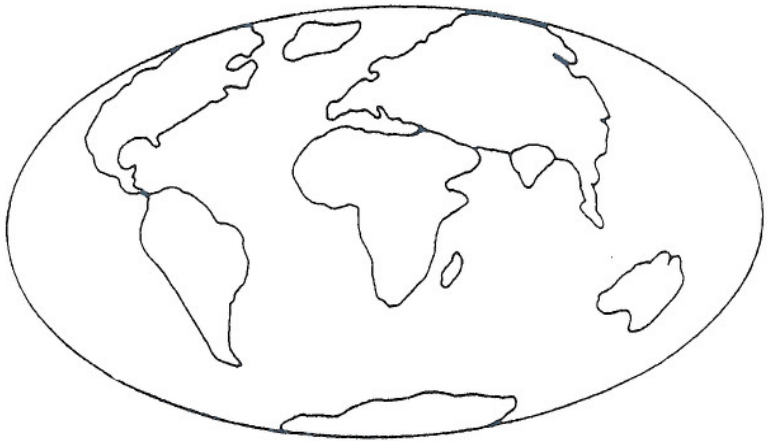
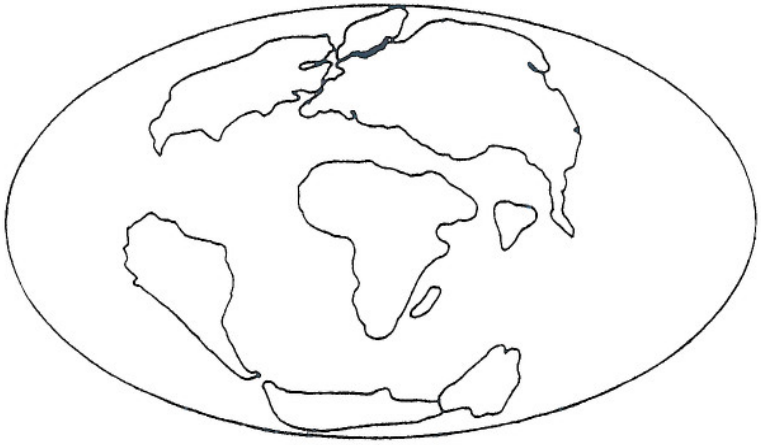
Earth Today and Long Ago

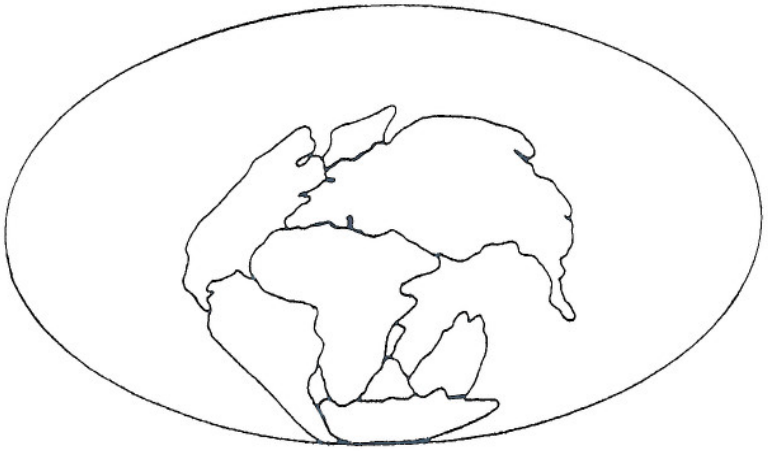
Today



65 Million Years Ago



240 Million Years Ago



420 Million Years Ago

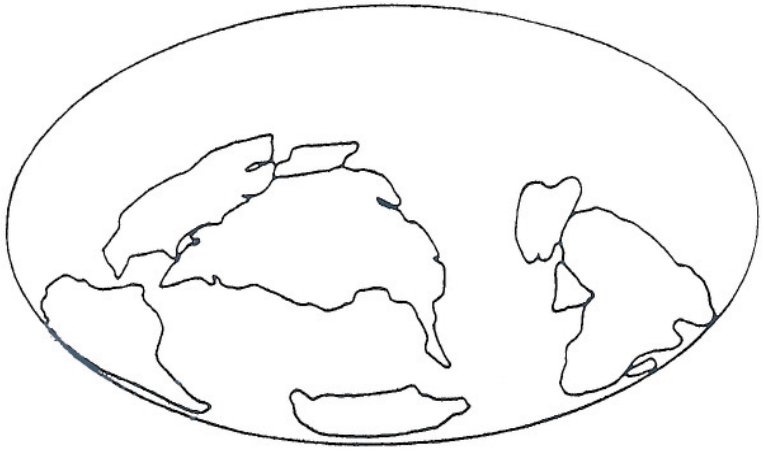


PLATE PUZZLE

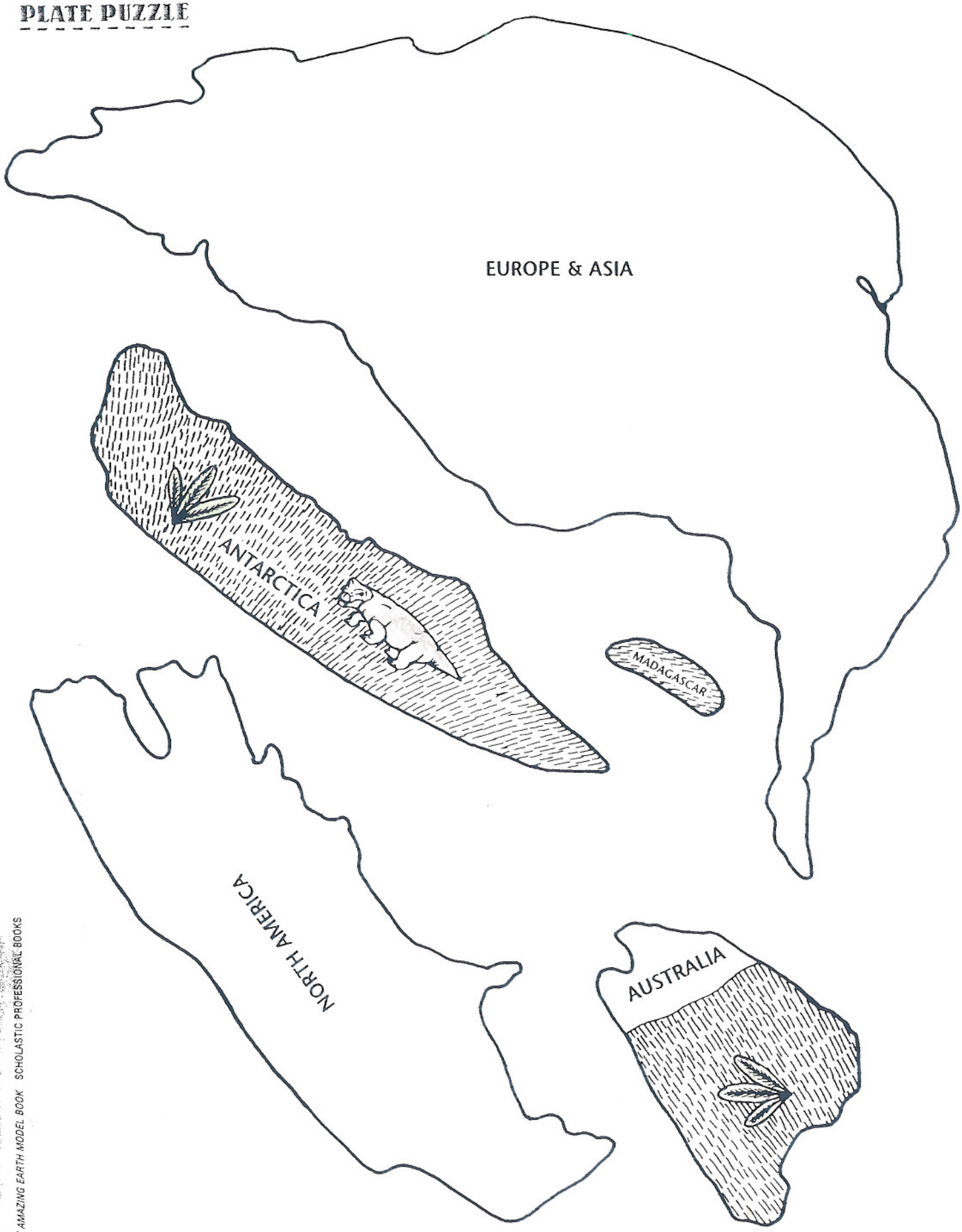


PLATE PUZZLE