

19C Evidence for Plate Tectonics

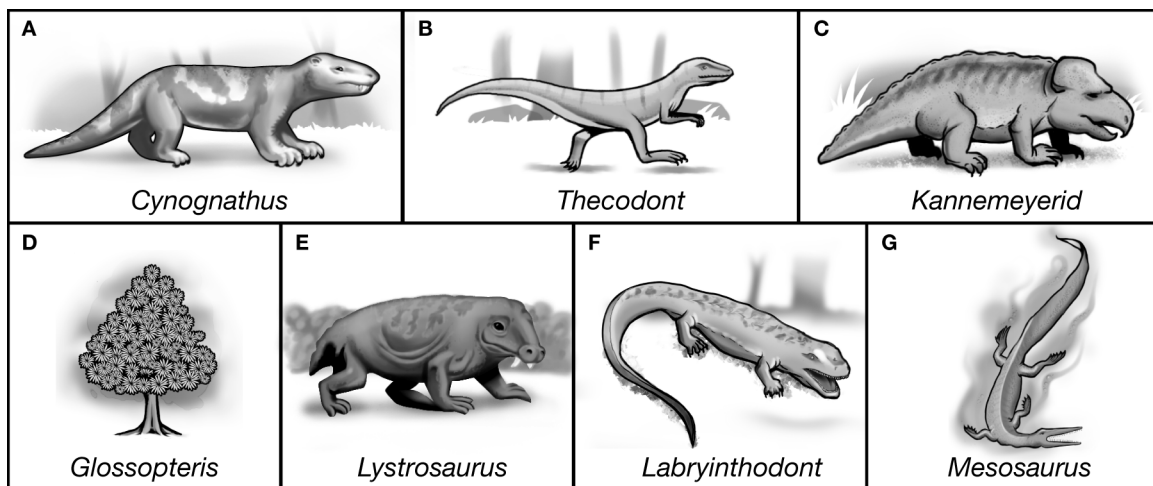
How are fossils useful evidence for continental drift?

Fossils are the remains or evidence of living organisms. Fossils come in different forms, including casts, molds, imprints, amber, and ice. Scientists can learn a great deal about life and the history of Earth using fossils. Fossils are useful evidence for understanding how organisms have evolved over time. They are also used to see how life has changed throughout Earth's history. Fossils have also been used to help scientists understand how the continents appeared millions of years ago. In this investigation, you will use several fossils to try to reconstruct how Earth's landmasses may have appeared approximately 250 million years ago.

Materials

- Bathymetric map
- Fossil data (included in investigation)
- Scissors
- Tape
- A piece of construction paper
- Pen or pencil

1 Setting up



	Fossil name	Locations found
A	Cynognathus	South America, western Africa
B	Thecodont	Europe, eastern North America
C	Kannemeyrid	northern South America, Africa, India, Asia
D	Glossopteris	eastern South America, central Africa, India, Australia
E	Lystrosaurus	Antarctica, southern Africa, India
F	Labrynthodont	Antarctica, central Africa, eastern Asia, Australia
G	Mesosaurus	southern South America, southern Africa

- Using the information table above, write the letter of each fossil onto the correct locations on your bathymetric map. Note: the locations given in the table are only approximate locations.

2 Stop and think

- a. Which of the fossils from the table were found in Antarctica? Why might this seem strange or unexpected?

- b. Which of the fossils from the table were found both in North America and Asia?

- c. What are some possible ways these organisms could have traveled from continent to continent when they were living?

- d. If these animals and plants were not able to swim across large bodies of water such as oceans or sea, explain how else the pattern of fossil distribution can be explained.

3 Doing the experiment

1. Cut out each of the following continents and landforms from your map: North America, South America, Antarctica, Africa, Europe, Australia, and Asia.
2. Place these continents onto your piece of construction paper.
3. Using the shape of the continents' coastlines and the locations where each type of fossil has been found, reconstruct the world so that all the continents are connected to form a large "supercontinent."
4. When you have completed the previous step tape down the continents to your piece of construction paper in the same positions you arranged them in step 3.

4 Thinking about what you observed

- a. *Glossopteris* is an extinct type of plant referred to as a seed fern. These plants most likely thrived in tropical climates. Do any of the locations where the fossils of the *Glossopteris* have been found seem strange? Explain your answer.

- b. *Thecodont* was a small dinosaur. Where have fossils of this dinosaur been uncovered? Does it seem likely that this animal could have traveled between these two locations? Explain your answer.

- c. How did the fossils of *Cynognathus* help you construct your map?

- d. Where on your new map is Australia? To which continents is it connected? Which fossils did you use to help place Australia? How were they useful?

- e. What other evidence might be useful for connecting the continents together into one giant landmass?
