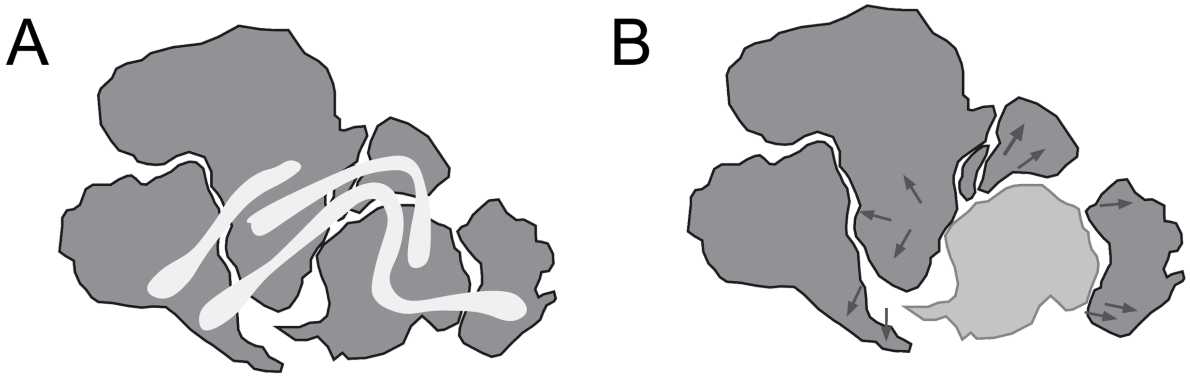
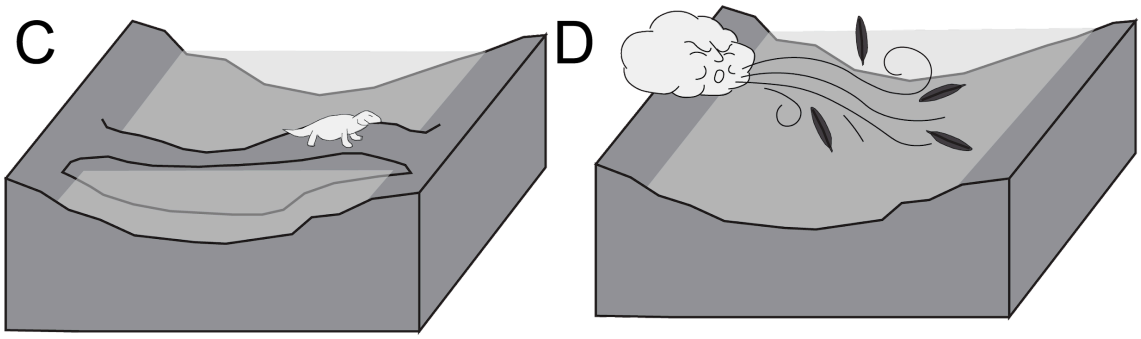
First some review of Plate Tectonic Theory History:

Early Evidence:



(A) The locations for unique plant and animal fossils are observed on 5 continents, and they line-up well when continents are re-oriented like a jig-saw puzzle.
(B) Similarly, the location of markings (scratches) on rock surfaces that indicate the presence of ice (and ice flow directions) in the past, align well when re-oriented to form a supercontinent.

Skeptics:



(A) Skeptics pointed to the potential for land-bridges that may have existed to have allowed animals to get across oceans.
(B) Skeptics also pointed to the possibility for wind currents to have carried plants (seeds) across great distances.

Now, test your knowledge:

Briefly define the following terms:

land bridge -

polar wander -

continental drift -

pangaea -

curie temperature -

seafloor spreading –

Answer the following:

1. Alfred Wegener was this type of scientist:
    A. Geologist
    B. Biologist
    C. Meteorologist
    D. Chemist
    E. Botanist

2. Wegener's idea that the continents move around on the surface of the Earth was known as _____.
    A. Continental Drift
    B. Polar Wander
    C. Pangaea
    D. Ice Flow Direction
    E. Sea Floor Spreading

3. What was the name Wegener gave to the supercontinent formed when the continents were re-assembled like a jigsaw puzzle?
    A. Gondwana
    B. Pangaea
    C. Laurasia
    D. Rodinia
    E. Arctica

4. Which of the following was not a reason that skeptical scientists argued against Wegener's theory? (you may have to consult your textbook)
    A. Land-dwelling reptiles moved across oceans on land bridges.
    B. Plants could have been spread along wind currents.
    C. The Earth was only hotter in the past, so ice could not have been present during a supercontinent.
    D. Polar wander could have been due to the poles moving, and not the continents.

5. Many similar plant fossils are spread across the continents of S. America, Africa, India, Australia, and Antarctica. However, no land animals are found outside a single continent.
    A. True
    B. False

In the above image, the continents with paleo ice location and flow direction markings have been re-oriented to locations similar to modern.

6. If you could not imagine the plates to have been shifted in the past, and instead assumed they were fixed in place since they were created, which statement best describes your observations of the above image?
    A. The direction of paleo (ancient) ice flow was from continents into oceans.
    B. The direction of paleo (ancient) ice flow was from oceans onto continents.
    C. The direction of paleo (ancient) ice flow was only recorded in continents in the northern hemisphere.
    D. The direction of paleo (ancient) ice flow was from south to north.

7. One of the most important fossil plants used as evidence for continental drift was glossopteris, why was this?
    A. This plant had very heavy seeds, which could not have been transported by wind.
    B. This plant had fossil leaves that were very difficult to identify in the fossil record.
    C. This plant had only one growth formation.
    D. This plant is adaptable to a large variety of climate regimes.

Now, think deeper:

On your own:

8. List some major scientific breakthroughs that have occurred throughout human civilization.

9. What other factors do you suppose lead to skepticism from the general public and science communities regarding the various breakthroughs you've listed above?

Working in groups of 2 or 3:

10. What other factors do you suppose lead to skepticism from the public and the science community regarding Alfred Wegener's ideas?

11. List some other geologic phenomenon that you think we now better understand thanks to knowledge of continental drift (plate tectonics)?

12. What about continental drift (plate tectonics) specifically helps us understand your listed geologic phenomenon?