Name _____
Date _____ Period 1 2 3 4 5 6

Marine Biology Lab Activity: Continental Drift

Background: When people made the first maps of the new world, the puzzlelike fit of the American and the European/African coastlines seemed more than a coincidence. Some intellectuals suggested that perhaps the continents might have been connected at one time, but few accepted this. Why? Because if the continents were connected at one time, then they had to have moved. Based on their senses, most people concluded that it is impossible for a continent to move.

In 1915, Alfred Wegener proposed that about 300 million years ago the continents had formed a single mass, called Pangaea (from the Greek for all the Earth). Pangaea had split, and its pieces had been moving away from each other ever since.

Today, scientists accept that continents move due to tectonic plate motion. Advanced scientific instruments and measurement prove the landmasses are moving. The evidence for tectonic plate motion was radical in the early and mid-twentieth century. Many in the scientific community of the day criticized it, yet today it is the accepted view by mainstream science.

Purpose: To learn about the Continental Drift Theory and the evidence that supports it.

Materials: glue sticks, scissors, map <u>with</u> continental shelves, map <u>without</u> continental shelves

Procedure:

1. Examine Map 1 carefully. Look at the coded areas on the map that shows fossil and geological evidence found on the landmasses. The fossil remains provide you with hints as to how to put the continents together. In addition to the fossil evidence is a coded area that shows mountain chains that have the same geology from one continent to another. You will use these coded hints, as well as the obvious coastline shapes, to combine the continents together to obtain the best possible fit. This will form one large supercontinent.
2. Being as accurate as you can, cut out the continents from Map 1. You will have 6 large continental landmasses, plus the Indian Subcontinent, the island of Madagascar, and the island of Greenland.
3. Once you have worked out the best possible fit, glue the pieces to the back of this paper.
   *You will not get a perfect fit. Even Wegener did not get a perfect fit, so you are in good company!
4. When you combine the continents together some will overlap. This is acceptable, especially with Greenland and Europe.
5. When you are finished with your first Pangaea map, begin your second. The second map you'll construct for this activity is similar to the first, with one exception. Your second map has the continental shelves shown along with the continents, plus the fossil and geological hints.

Questions:

1. What do you feel is the most compelling evidence that the continents were once linked together?

2. Why do the continents fit together better with today's knowledge than in Wegener's time?

3. Based on the apparent movement of the continents from Pangaea to today, what can you infer about the size of the Atlantic and Pacific Ocean basins at some time in the future?

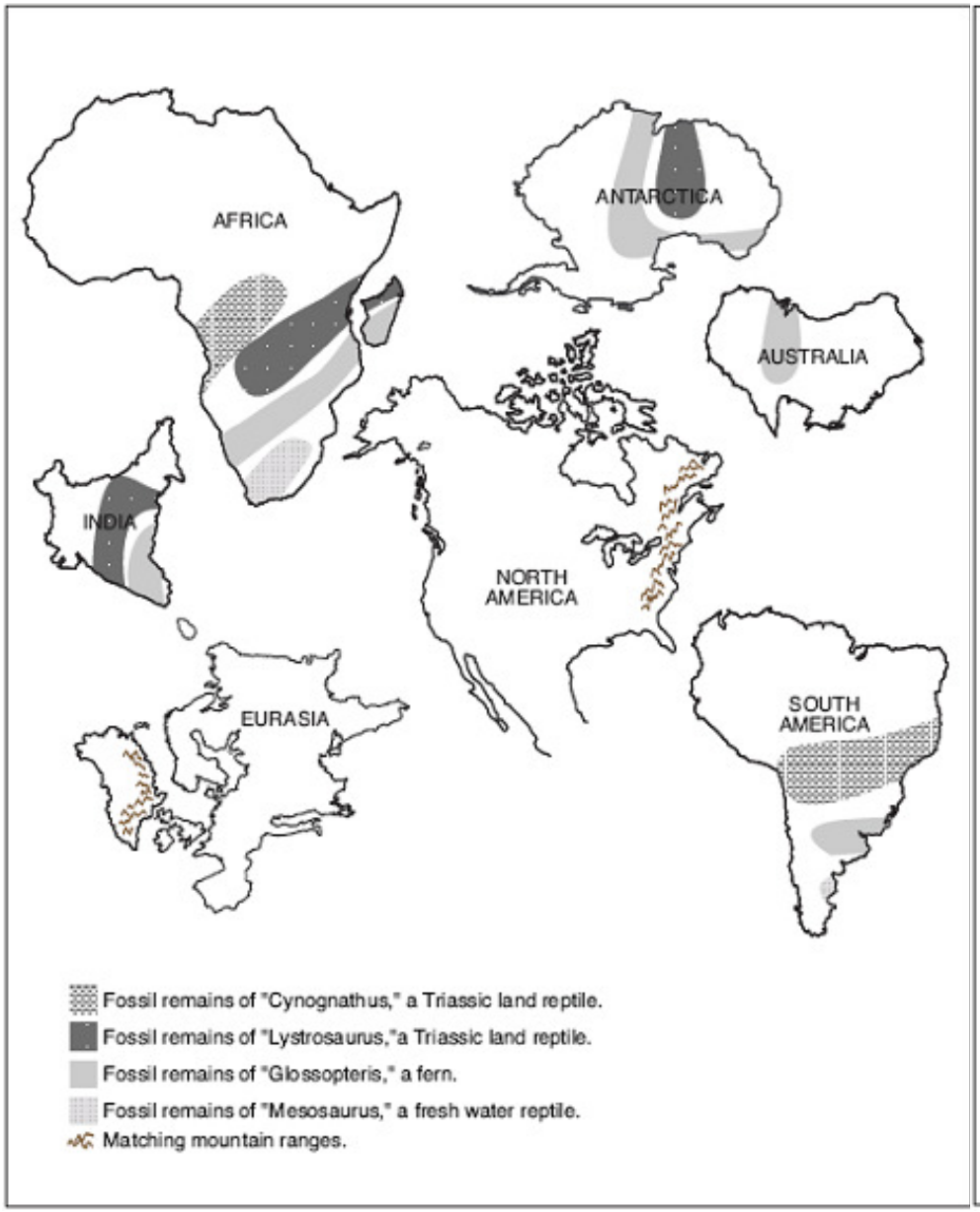
4. What ocean scanning technology, developed during Wegener's time, could have produced data to support his Theory of Continental Drift?

Pangea: A Fit Along Existing Coastlines

without continental shelves

with continental shelves

Map 1 : Continents without continental shelves



Map 2: Continents with continental shelves