Name _____ Date _____ Class _____

PRIMARY SOURCE READING 1

Fossil Hunting in East Africa

Mary and Louis Leakey were scientists who worked in East Africa for many years. There, in a place called Olduvai Gorge, the Leakeys found some of the oldest-known evidence of human beings on earth. Not surprisingly, their son, Richard, also became an anthropologist. Here, Richard explains his work in Kenya's Great Rift Valley, where many fossils are found. Geology and geography have combined to make this area a good place to study prehistory.

Guided Reading *In this selection, read to learn how fossils are formed and where most fossils are found.*

The search for clues

My childhood was spent in various remote areas of East Africa, in Kenya and Tanzania, where my parents were searching for evidence of our ancestors. For many months they searched the fossil sites on the islands and shores of Lake Victoria. At other times I remember chasing sheets of cellophane blowing away in the wind as my mother laboriously traced the art of our ancestors in rock shelters in Tanzania. But perhaps the most exciting times of all were at Olduvai Gorge on the Serengeti Plains where wild animals were a natural part of our everyday life.

Since then I have continued searching for evidence of the past in my own career, and I have experienced for myself the thrill of finding a complete skull of one of our ancestors, two million years old.

The cracking of Africa

I was very fortunate to be born in Kenya, for Kenya has running through it the East African Rift Valley. This exceptional geographic feature has led to the formation of numerous fossil sites during the last twenty million years, the period of time when humans evolved from primitive ape-like animals into the intelligent creatures that we are today.

The East African Rift Valley marks an area of weakness in the earth's surface, that runs through Africa, from the Red Sea in the north to Mozambique in the south. Flying over the Valley in an aeroplane one sees the sides rising, sometimes as much as 2,000 metres (6,600 feet) above its floor. In places the Valley is as much as 80 kilometres (50 miles) wide; it is lined with huge cliffs and escarpments, and dotted with volcanoes surrounded by vast black lava flows.

Twenty million years ago, however, this huge rift was only a shallow depression marked by lakes and volcanoes. As the depression gradually deepened, cracks began to form in the earth's surface, creating the cliffs and escarpments we see today.

While these massive movements were taking place, other events were happening which were important for the preservation of clues about our past. As the lakes formed in the Rift Valley depression, rivers began to wash away soil and rocks from the newly formed hills on either side. This soil was carried down the hills by the rivers and later dumped on flood plains and deltas, and in the lakes themselves. In these places sediments of sand, silt and clay gradually built up, and any bones of dead animals lying in these areas became buried and preserved as fossils. Among the animals which were preserved in this way were some of our ancestors.

These geological processes have continued in the Rift Valley over the past twenty million years, so that many layers of sediment and fossilized bones have been built up. In some places these are hundreds of metres thick. Often the layers of sediment and the fossilized bones have remained buried, but in some areas movements of the earth's crust have continued and caused them to be uplifted. When this happens they in their turn become eroded by rivers, which cut through the layers of rock like a cake and expose the fossilized bones. It is in these places that, with careful searching, we can find many clues from the distant past.

Name _____ Date _____ Class _____

PRIMARY SOURCE READING 1

How to get preserved as a fossil

Unfortunately the chances of any animal becoming a fossil are not very great, and the chances of a fossil then being discovered many thousands of years later are even less. It is not surprising that of all the millions of animals that have lived in the past, we actually have fossils of only a very few.

There are several ways in which animals and plants may become fossilized. First, it is essential that the remains are buried. Dead animals and plants are quickly destroyed if they remain exposed to the air. Plants rot, while scavengers, such as hyaenas, eat the flesh and bones of animals. Hyaenas love to crunch the bones, while beetles, flies and grubs consume all edible parts that are left. Finally, the few remaining bones soon disintegrate in the hot sun and pouring rain. If buried in suitable conditions, however, animal and plant remains will be preserved. The same chemicals which change sand and silt into hard rock will also enter the animal or plant remains and make them hard too. When this happens we say that they have become fossilized. Usually only the bones of an animal and the toughest part of a plant are preserved.

The soft body parts of an animal or the fine fibres of a leaf may occasionally become fossilized, but they must be buried very quickly for this to happen. It may sometimes occur with river and lake sediments but is much more likely to happen with volcanic ash. One site near Lake Victoria, where my parents worked, contained many thousands of beautifully preserved insects, spiders, seeds, twigs, roots and leaves. A nearby volcano must have erupted very suddenly, burying everything in a layer of ash. The insects had no time to escape before they were smothered.

As we have seen, river and lake sediments preserve a great many bones, but caves are another site where fossils are easily formed and luckily our ancestors left many clues in caves which make convenient shelters and homes. Things that people brought in as food or tools were left on the cave floor, and mud, sand, and other debris washed in by rivers and rain buried them.

CHAPTER 1

INTERPRETING THE READING

Directions *Use the information from the reading to answer the following questions. If necessary, use a separate sheet of paper.*

1. How does a plant or an animal become fossilized?

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2. Where are some good places to find fossils?

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3. What generally happens to the remains of a plant or an animal when it dies? How does this help explain which parts of plants or animals usually form fossils?

_____

Critical Thinking

4. **Making Inferences** Is fossil hunting a quick or slow process? How do you know?

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