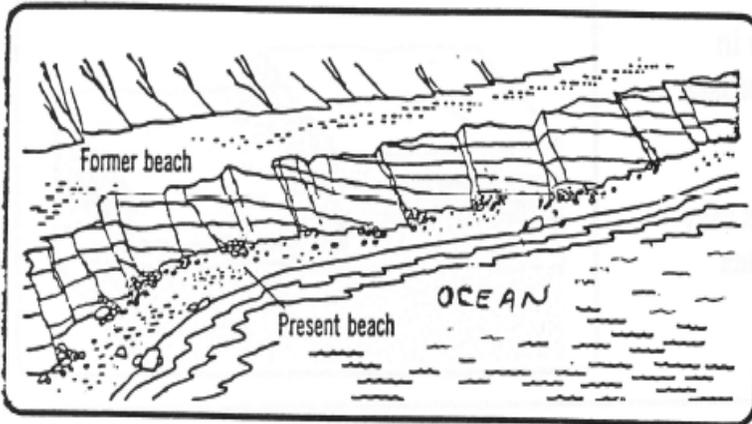


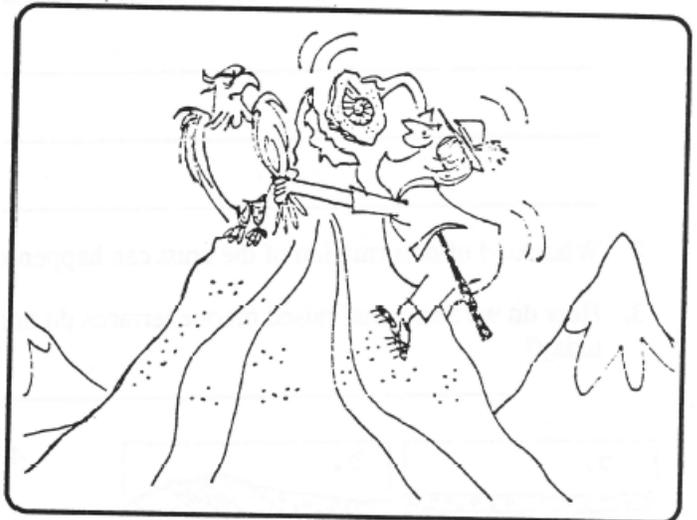
EVIDENCE OF CRUSTAL MOVEMENT

We use the term, “steady as a rock” to describe something that doesn’t move. Yet, we can see evidence all around us that the solid rock does move. The Earth is dynamic.

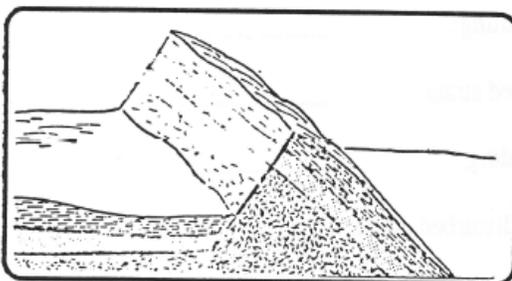


In some places we can observe that flat terraces well above sea level. If these benches were caused by wave action when the oceans were higher than they are now, we would observe them at the same elevations around the world. Their various elevations in different places shows that they have been created at sea level, and then pushed up different amounts in different places.

Most sedimentary rocks are composed of sediments that were deposited in the oceans. When we find fossils of marine organisms in the mountains, several kilometers above sea level, we know that the crust of the Earth has been pushed up from below. A band of limestone near the summit of Mount Everest, the world’s highest point, was originally deposited as animal shells in the oceans.

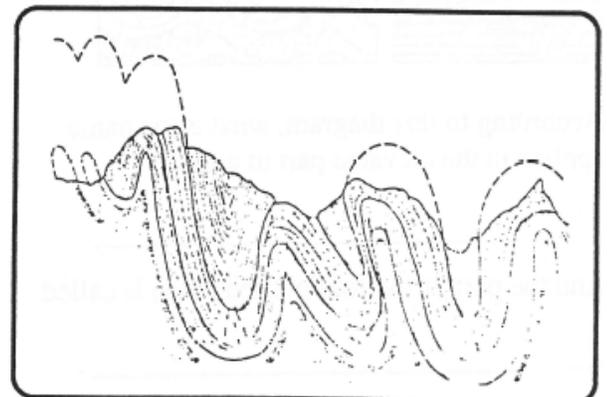


Marine life is the most common near the surface where sunlight provides energy and where oxygen is abundant. When we observe fossil corals thousands of meters below sea level, we infer that the Earth’s crust has subsided (sunk to a lower level).



Layers of sediment are originally deposited flat and level. But in some places we see where these layers have been tilted, or even overturned. Originally flat layers that have tilted provide evidence of the dynamics of Earth’s crust.

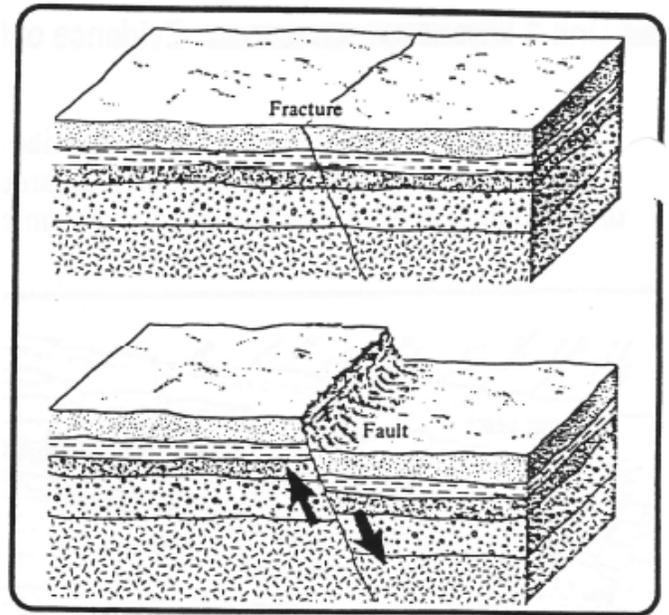
In some places the rock layers are bent into complex folds. The intense deformation of rock layers that we observe in many mountain areas is strong evidence that the mountains were made by motions and crumpling of the crust. Although these folds may be dramatic, they probably happened deep within the Earth, and at a very slow pace.



When rock layers are stressed by motions of the crust, they may break along zones of weakness. These cracks are known as joints. Additional stress may cause the rocks to shift along these surfaces. A crack in the Earth along which there has been movement is called a geologic fault.

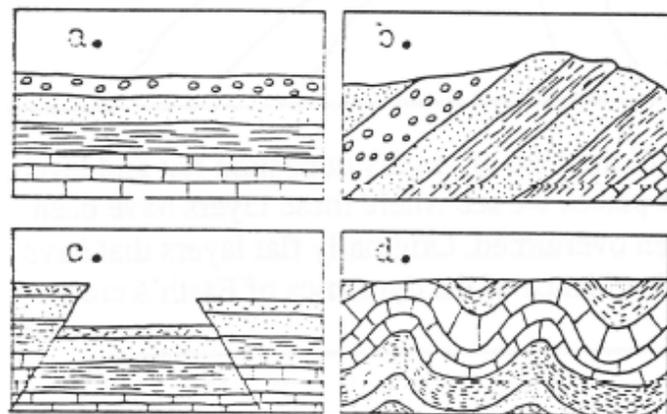
Most faults are not the well defined surfaces shown in this diagram. Usually faults are complex zones of broken rock between blocks of relatively solid bedrock.

Unlike the other changes shown in this paper, faults may happen very quickly. The energy of the break radiates through the Earth as an earthquake.



1. List five observations that show evidence of past motions of the Earth's crust.

2. What kind of deformation of the crust can happen quickly? _____
3. How do we know that raised marine terraces do not represent a time when sea level was higher than it is today?



4. Which of these diagrams shows...?

Faulting: _____

tilted strata: _____

folding: _____

undisturbed strata: _____

5. According to this diagram, what is the name applied to the elevated part of a fold?

And the part of the fold pushed down is called a...

