Fault Block Mountains

Description of Model 3: Fault Block Mountains

This model represents the region where the underlying sedimentary beds have become disturbed by various kinds of faulting, causing block mountains to be formed. The main fault block range (47) has been partially eroded, while the block mountains to the east of the main range have been greatly eroded and only remnants of the former range remain. The steep fault scarps of the range are on the east of the crest of the range, while the long back slopes of the uplifted blocks are to the west of the crest. Immediately after the faulting, mountain ranges probably appeared singly as great blocks faulted and uplifted on the east and sloping off toward the west. Then the forces of erosion produced steep-walled canyons (52) in the fault blocks. The canyons in the front of the block, which are cut in the fault scarp, have steeper gradients than the ones on the back, which are cut in the more gentle back slopes. In arid climates, land forms tend to be angular, in contrast to the rounded land forms of a moist climate.

The fault scarp now appears as a series of triangular facets (48) and the presence of these triangular facets is further evidence of faulting.

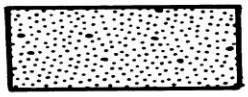
Where each canyon leaves the mountains a large alluvial fan (46) occurs deposited by the intermittent streams. As a stream comes down the canyon cut into the fault block, its gradient is very steep. Suddenly the gradient decreases and the carrying power also decreases and material is deposited in the form of an alluvial fan. Fans which have become joined are known as a "bahada". As erosion reaches a greater stage of maturity, the mountains will become smaller and the bahada slopes larger. The bahada slopes and the basins will become integrated and the mountains will remain islands protruding from the bahada lands.

The several fault block ranges produce enclosed desert basins. The drainage of such a region is not integrated and the streams which periodically come from the mountains produce intermittent lakes in the enclosed basins. Since there are no outlets to these lakes, they accumulate great quantities of minerals and salts.

A fault splinter (45) appears at the north edge of the model. This is a newer fault and occurs parallel to the plane of the original fault, producing a fault scarp in the bahada slope. Mineralization often occurs along fault lines and thus mineral deposits may be found in some fault block mountains.

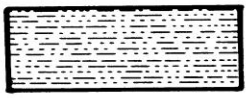
From *Geology Models Study Guide* by Robert B Lewis

LEGEND

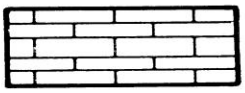


SANDSTONE

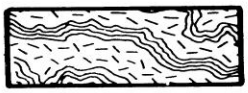
CONGLOMERATE



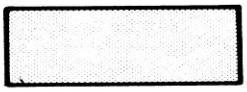
SHALE



LIMESTONE



METAMORPHIC ROCK



ASH

Fault Block Mountains Find each feature on the model and write the number of the feature in the table below. Answer the questions below.

Feature Number (and/or Coördinates)	Feature Name
	Playa
	Internal Drainage
	Block Mountains
	Desert Basin
	Piedmont Alluvial Plain
	Canyon
	Cresent Dunes(or Barchanes)
	Graben
	Horst
	Conduit
	Fault

1. What is a Playa?

2. What is the difference between internal and external drainage?

3. What is the major mountainous desert landscape in the southwestern United States?

4. How did the landform in the previous question develop?

5. Faults are described as Normal Thrust or Reverse Thrust. Which is considered Convergent? Divergent? Which is caused by Compression? Tension?

6. What is the approximate Temperature of the Magma in a Pipe or Conduit?