Monocline Encyclopedia Article

Monocline

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Monocline

Monoclines are **folds** consisting of two horizontal (or nearly so) limbs connected by a shorter inclined limb. They can be compared to anticlines, which consist of two inclined limbs dipping away from each other, and synclines, which consist of two inclined limbs dipping towards each other.

Folds such as monoclines, anticlines, and synclines are defined solely on the basis of their geometry, and the names therefore have no genetic connotations. Monoclines are, however, characteristic of regions in which **sedimentary rocks** have been deformed by **dip** slip movement along vertical or steeply dipping faults in older and deeper rocks, such as the Colorado Plateau of the southwestern United States. An excellent example of a Colorado Plateau monocline is the Waterpocket fold in Capitol Reef National Park. Most monoclines are classified as drape folds or forced folds because the sedimentary rocks are draped or forced as a result of movement along the underlying faults. Drape folds and forced folds are not necessarily monoclinal, though, so care must be taken to distinguish between geometric and genetic names.

The shape of a monoclinal drape fold is controlled in part by the nature of the underlying fault (normal, reverse, or vertical) and in part by the mechanical nature of the strata being folded. A sequence of relatively thin strata, for example, is less resistant to folding than a single **rock** unit of the same aggregate thickness. Thick rock units such as massive sandstones may fracture during monoclinal folding because they are too stiff to be bent without breaking, whereas rock units such as shales may be easily folded because they consist of innumerable and thin laminae that are weakly bonded to each other. Likewise, the rock type of the lowermost layer being folded has an influence on the form of the fold. A weak rock such as shale, salt, or **gypsum** can attenuate much of the movement along the underlying fault and reduce the amplitude of the resulting fold.

See Also

Faults and Fractures; Syncline and Anticline