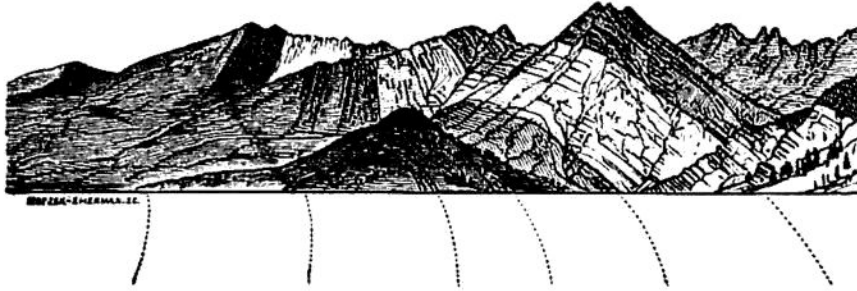


by another, very much like the folds above the elbow in a woolen coat-sleeve. The flexures are those of a warped surface, parallel usually in direction, but mutually involved along their course. Hence there are large variations in dip between the flexures.

105.



Upturned strata of the west slope of the Elk Mountains, Colorado. The light-shaded stratum, Triassic-Jurassic; that to the right of it, Carboniferous; that to the left, Cretaceous. Holmes, Gardner.

*Models of flexures* may be conveniently made out of a large unhewn branch of a tree of coarse-grained wood, having the bark on. A piece of the branch (3 or 4 inches or more in diameter) 12 to 18 inches long, cut obliquely from a diametral line at one end at an angle of  $20^{\circ}$  or so, will afford two models of a flexure with an inclined axis. By coloring groups of layers in the wood, using for greater simplicity not more than three colors, the appearances of the flexed strata may be studied in horizontal, vertical, and any other sections that may be cut. Such models might be made by pasting together sheets of differently colored paper, or layers of paper-pulp, and so making a cylinder, and then cutting it as above. By pressure the cylinder might be made elliptical, and models might be obtained with unequal dips on the two sides.

*Geanticlines, geosynclines.* — The flexures in rocks which have been above described and illustrated by figures are flexures of the strata of the earth's exterior, or the supercrust, not of the crust itself. The crust is thick, and it is impossible, were it but 10 miles thick, that it should be bent into so small and abrupt flexures. It has, however, its own great flexures of low angle and of great breadth, both upward and downward. It is proved that the stratified rocks of the Alleghanies were laid down in one such downward bend or trough, a thousand miles long, during the long ages in which it was slowly deepening. There are also evidences that upward bends of similar extent have been made. These flexures of the crust are termed *geanticlines* and *geosynclines*, the prefix in these terms being derived from the Greek word for *earth*. The basin of Lake Superior probably corresponds to a geosyncline, as suggested by T. C. Chamberlin.

*Fractures, faults, compression and stretching of rocks.* — The fractures intersecting rocks are of all sizes, from those small cracks that result from contraction on drying and cooling, and from gravitational pressure on strata of varying compressibility or of insufficient support, to those, sometimes miles in depth, that are made in the grander movements of the earth's crust.