In the progress of the upturning the sandstone was variously fractured and faulted; and the masses into which it was thus divided were in part forced over one another, and up whatever surfaces lay beyond, and thus the monoclinal structure was produced. The abraded surfaces of the beds, extensively exhibited in some regions, indicate that there was a vast amount of intestinal movement as well as ordinary faulting. The sandstone should therefore have acquired its greatest thickness, from piling on itself, on the side of the area in the direction of the movement; that is, on the west side in the Connecticut valley, and on the east, in the Palisade belt. Moreover, the confining slope of the trough on this side would have been an obstruction that would have there increased the fracturing and the amount of piling.

The lateral thrust would have narrowed the belt of deposits of each geosyncline. The amount of narrowing, taking the mean dip of the beds at 15°, and supposing no modifying conditions, would have been about 100 feet for every 3000 feet of width. But the piling of the beds referred to above, and the shoving of the beds beyond the limit of the original area or trough, are modifying conditions that cannot be estimated.

The shallow mass of deposits in each geosyncline had a temperature at bottom possibly of 200° F. or 300° F.; for, if 10,000 feet thick, the present rate of increase in temperature downward would make the maximum only 200° F. This temperature was sufficient only for a partial consolidation of the beds through any siliceous waters that might have been made, and for the reddening of them by the oxidation of any iron present. The movements from lateral pressure against the trough in the earth's crust, in which the beds lay, might have produced their results by molecular transfer in the mass of the crust. But the facts point unquestionably to great and deep fractures. The directions of such fracture-planes would have been determined partly by the positions of the weaker planes in the rocks beneath. Such weak planes may be due to kinds of rocks; to the foliation or bedding of the rocks; to earlier fault-planes; or to preëxisting mountain features of the Atlantic border. But their actual positions are not often determinable except so far as they may be inferred from the lines of eruptive rocks.

Igneous eruptions over the Triassic areas. — The general features of the outcrops of trap over the areas are well displayed in the Connecticut valley, an excellent map of which for the state of Connecticut is contained in J. G. Percival's *Geological Report* (1842); and for the Massachusetts portion, by B. K. Emerson, in the *Bulletin of the Geological Society of America* for 1891. The accompanying map, Fig. 1346, which is part of Percival's, embraces the southern three fifths of the whole area in Connecticut, or the part from the Sound to the latitude of Hartford. Its length is 37 miles, or about one third of that of the whole valley.

On the map the dotted lines *nn*, *mm* mark the outlines of the Triassic area; outside, both to the east and west, the rocks are crystalline rocks. The heavy black lines represent the outcrops of trap. Commencing at the south, the abbreviations used on it are as follows: N H, New Haven; *pp*, *bb*, dikes of trap outside of the area, on the west; and