

In Connecticut, the sandstone beds almost invariably dip eastward. In Virginia, in the Richmond area, which is one of the *easternmost*, the beds have a *synclinal* structure, the rocks on the east side dipping northwestward, and those on the west side, southeastward (Fontaine). In the *eastern* Deep River area of North Carolina the dip averages 20° southeastward, but varies from 10° to 35° (Fontaine).

Notwithstanding the diversity between the orographic features of the more western and the eastern belts, the intimate relation to the Appalachian system as regards method of upturning of the former as well as of the latter cannot be questioned. The opposition of direction in dip is connected with opposition in all other structural features in the two ranges of belts, and eminently so in the topography.

The opposition in dip between the Connecticut valley and the Palisade area has been explained by supposing that the sandstone was made in waters that spread over the intervening region, and that an actual anticline was produced by an uplift. But only marine waters could have covered the wide region after great subsidences; and to this idea, all the facts as to the fresh-water origin of the beds by fluvial, lacustrine, or estuary agency are opposed. Moreover, the Connecticut valley area is wholly in latitudes more northern than the Palisade.

This reversed condition, so marked in the results over the two areas, simply implies reverse action in the forces concerned. In the Palisade region, accordingly, the lateral pressure was *from the westward*; thus came the reversed dip and reversed fault-planes and faulting. On this view of the action along the two belts,—that is, the lateral thrust from the eastward for the eastern, and from the westward for the western,—the pressure was such as would tend to make, or actually did make, a geanticline between two extended lines, an eastern and a western. But upturnings of beds took place only where there had been geosynclines of deposition, that is, in the Triassic areas.

The effective upturning force acted *alike* from opposite directions, the eastern, or oceanward, and the western, or landward; while in the Appalachians its action was from the eastward chiefly; but, still, like the Appalachian Range as a whole, each of the several areas is inequilateral in orogenic structure. The Connecticut valley area tapers out, both as to width and depth of deposits, at New Haven Bay on the Sound. There is no trace of the trough over Long Island. It is possible that in the direction of this eastern Triassic line a sandstone area existed over the shallow-water border of the Atlantic, south of Long Island and east of New Jersey; but no proof of this has been observed. In the Richmond area of eastern Virginia, however, and in the Deep River area of North Carolina, as the dip of the beds of each proves, the true continuation is found, for these areas have the same position relatively to the western areas of those states, as the Connecticut valley area has to the Palisade area. The map on page 412 illustrates the fact, not only that these areas mark out the position of the eastern side of the series of Triassic belts, but also that it is parallel to its axial line.