

unopposed current, seems to the writer to be conclusive.¹ The argument based on the thickness of sediments about the Adirondacks, and their necessary wide overlapping on the gentle slopes of the Precambrian old land, also seems conclusive as to complete submergence during the Utica, the thickness and the evidence of gentle land slope being ample to warrant the conclusion. If any land remained during the Utica, it could have consisted of nothing more than a few, low, insignificant islands, and such must have been along the southern margin of the region. The slight amount of Trenton submergence in the lower Mohawk region may well indicate that, during a portion of Trenton time, there existed here a shoal barrier between the eastern and western basins.

The Utica was brought to a close by the shallowing of the waters, which may well have brought a considerable part of the Adirondacks, specially on the north, above sea level, though this is mainly conjectural. During Lorraine time, which followed, a shoal was developed in the region about Utica, probably extending thence northeastward, which separated the eastern and western waters. This would seem definitely to imply the emergence of land to the northward, and likely by the close of the Lorraine a large part, if not the whole of the Adirondacks, was elevated above sea level. The following Medina, Clinton and Salina waters washed the western and southwestern sides of the region only and may well have somewhat encroached on its margins. Then came elevation on the west, and the Helderberg depression on the east, the latter probably involving the eastern border of the district. The succeeding Devonian deposits may have reached the southern rim of the area, but could hardly have invaded it to any considerable extent.

Paleozoic igneous rocks. On both the eastern and southern margins of the Adirondack region, the Paleozoic rocks which fringe it are found to be cut by igneous rocks, mainly in the dike form. In the Champlain region these rocks cut, and are therefore younger than, the Utica shale, the youngest of the Paleozoic rocks to be found in the district. In the upper Mohawk district the dikes also cut the Utica shale.

¹Am. Geol., June 1897 and February 1898, p.75.